

THE ACRIDOIDEA (ORTHOPTERA)
OF MADAGASCAR
III. PYRGOMORPHIDAE



BY

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THE ACRIDOIDEA (ORTHOPTERA)

OF MADAGASCAR

III. PYRGOMORPHIDAE

By V. M. DIRSH

SYNOPSIS

The family *Pyrgomorphidae* of Madagascar is revised. Six new genera and eight new species are described. Inadequately described genera and species are redescribed and synonymy checked. Interrelation between genera and species is briefly discussed.

Family PYRGOMORPHIDAE

THE family *Pyrgomorphidae* is richly represented in Madagascar. Most of the genera and species are purely endemic and from the taxonomic point of view peculiar. Interrelation of many of them with other genera and species of the family is rather obscure. It seems likely that less than half of the genera and possibly less than a quarter of the species of *Pyrgomorphidae* of Madagascar are known. Further study of the fauna of the island is necessary to produce new data which could help in understanding the interrelationships of this family.

One species (*Caprorhinus squamipennis* Bruner), which is not from Madagascar but Comoro Is., is included in this part as essential for an understanding of the whole genus.

The key to genera below is purely artificial and does not reflect phylogenetic interrelation between the genera.

In this part, the bibliography contains only those references not already given in parts I and II (Dirsh, 1962).

KEY TO GENERA

- 1 (26) Bases of antennae located behind lateral ocelli. Lower external area of hind femur not displaced ventrally to external medial area γ .
- 2 (3) Pronotum strongly tuberculate and toothed; dorsum flattened; lateral lobes attached to dorsum at a right angle (Text-figs. 1, 2) **PHYMATEUS** (p. 52)
- 3 (2) Pronotum not tuberculate or with small tubercles and without teeth; dorsum cylindrical, or subcylindrical; lateral lobes roundly merging with dorsum.
- 4 (23) Head conical or acutely conical, without process formed by fastigium of vertex and upper part of frons.
- 5 (12) Elytra fully developed, shortened or vestigial.
- 6 (7) Lateral carinae of pronotum present (Text-figs. 4, 5) **PYRGOMORPHELLA** (p. 57)
- 7 (6) Lateral carinae of pronotum absent.
- 8 (11) Elytra shortened, touching each other at dorsum, lobiform lateral, covering tympanum, or fully developed (in f. macroptera).
- 9 (10) Head narrow, acutely conical; fastigium of vertex more than twice as long as its width. Metazona of pronotum not raised. Elytra lobiform, lateral or in f. macroptera fully developed (Text-fig. 6) **RUBELLIA** (p. 62)
- 10 (9) Head widely conical; fastigium of vertex slightly longer than its width. Metazona of pronotum raised or inflated. Brachypterous or micropterous (Text-figs. 7, 8) **PSEUDORUBELLIA** (p. 64)
- 11 (8) Elytra vestigial, scale-like, not covering tympanum (if present) (Text-fig. 9) **CAPRORHINUS** (p. 67)

- 12 (5) Elytra completely absent.
- 13 (20) Frontal ridge, in profile, angularly or roundly merging with fastigium of vertex.
- 14 (15) Head short, conical ; fastigium of vertex wider than its length. Male cercus widened in basal and narrowed and incurved in apical part (Text-fig. 15) **GYMNOHIPPIUS** (p. 75)
- 15 (14) Head elongate, narrow conical ; fastigium of vertex longer than its width. Male cercus simple, conical or subconical.
- 16 (19) Male subgenital plate simple, slightly compressed, in profile with rounded apex.
- 17 (18) Male body elongated, very cylindrical, in female slightly fusiform. Sides of mesosternal interspace slightly incurved or straight (Text-fig. 16) **PARASPHERA** (p. 76)
- 18 (17) Body, in both sexes, strongly elongated, cylindrical. Sides of mesosternal interspace strongly incurved (Text-fig. 17) **DYSCOLORHINUS** (p. 78)
- 19 (16) Male subgenital plate from above trilobate, lobes formed by lateral and median carinulae (Text-fig. 18) **AMBOSITRACRIS** (p. 80)
- 20 (13) Frontal ridge, in profile, excised before merging with fastigium of vertex.
- 21 (22) Body very slender, elongated, narrow cylindrical. Fastigium of vertex strongly elongated, narrow angular, more than twice as long as its width. Antenna longer than head and pronotum together (Text-fig. 19) **SAGITTACRIS** (p. 82)
- 22 (21) Body cylindrical or slightly fusiform. Fastigium of vertex parabolic, less than twice as long or shorter than its width. Antenna shorter than head and pronotum together (Text-fig. 20) **PYRGOHIPPIUS** (p. 84)
- 23 (4) Head conical, with protruding process formed by fastigium of vertex and upper part of frons.
- 24 (25) Male anterior femur on external side with row of large teeth. End of abdomen not inflated. Cercus simple, conical (Text-fig. 21) **GEOLOIUS** (p. 86)
- 25 (24) Male anterior femur without teeth. End of abdomen inflated. Cercus large, incurved, with wide basal and strongly widened apical part ; apex below with angular projection, above with very large inverse axe-shaped projection (Text-figs. 25, 26) **PSEUDOGEOLOIUS** (p. 92)
- 26 (1) Bases of antennae located in front of lateral ocelli. Lower external area of hind femur displaced ventrally to external medial area.
- 27 (30) Fully winged. Frontal ridge over whole length low, not protruding in apical part and not excised at apex.
- 28 (29) Lower external area of hind femur strongly widened and displaced ventrally to external medial area (Text-fig. 27) **SCHULTHESSIA** (p. 95)
- 29 (28) Lower external area of hind femur narrow, slightly displaced ventrally to external medial area (Text-fig. 28) **ATRACOMORPHA** (p. 97)
- 30 (27) Micropterous or apterous. Frontal ridge in apical part compressed and protruding, at apex, in profile, excised (Text-fig. 29) **UHAGONIA** (p. 100)

PHYMATEUS Thunberg, 1815

Phymateus (*Maphyteus*) I. Bolivar, 1904 : 403.

Maphyteus I. Bolivar, 1904 ; Kirby, 1910 : 312 ; Dirsh, 1958 : 51.

Large and robust. Integument rugose and tuberculate. Antenna thick, filiform. Fastigium of vertex short, convex, angular ; apical fastigial areolae poorly developed, convex ; fastigial furrow short, deep ; head conical ; frons oblique and incurved ; frontal ridge narrow, sulcate with thick lateral carinulae. Dorsum of pronotum flattened, covered with tubercles and teeth ; median carina low, widely interrupted by three sulci ; metazona shorter than prozona, its posterior margin rounded, with tuberculate or toothed edge ; lateral lobes attached at a right angle. Prosternal process large, acutely conical ; mesosternal interspace longer than its width, distant from transverse metasternal interspace. Elytra and wings fully developed ;

wings brightly coloured, with tessellated pattern. Tympanal organ well developed. Hind femur narrow ; external apical spine of hind tibia present. Arolium large. Male supra-anal plate elongate, angular ; cercus conical ; subgenital plate subconical, obtuse. Ovipositor short, robust, with curved valves.

Phallic complex : cingulum strongly sclerotized ; valves of cingulum short ; penis straight, with slightly curved apex ; basal valve moderately widened, apical valve acute or subacute. Epiphallus robust ; bridge moderately short ; lophi short, with large, strong hooks ; dorso-lateral appendices short, stout.

Spermatheca irregularly twisted ; widely vermicular, with single diverticulum ; sometimes there is bulge suggesting presence of second diverticulum.

Type species : *Gryllus Locusta morbillosus* Linnaeus, 1758.

KEY TO SPECIES

- 1 (2) Elytra from steel-bluish to olive-green, tessellated pattern yellow ; hind wing crimson red *saxosus* Coquerel
- 2 (1) Elytra from brownish-orange to olive-green, tessellated pattern orange or absent ; hind wings from orange to orange-red *madagassus* Karsch

Phymateus saxosus Coquerel, 1861 (Text-figs. 1, 3)

Phymateus saxosus Coquerel, 1861 : 500.

Phymateus puniceus I. Bolivar, 1904 : 415, **syn. n.**

Phymateus buyssoni I. Bolivar, 1903 : 190, **syn. n.**

Phymateus buyssoni var. *spinosus* I. Bolivar, 1904 : 416, **syn. n.**

Phymateus cardinalis I. Bolivar, 1904 : 516, **syn. n.**

♂. Antenna 19-segmented, longer than head and pronotum together. Head above with median carinula.

General coloration steel-bluish ; antenna black ; dorsum of pronotum red, with red spines and tubercles, olive-green or dark brown, with red spines and tubercles, or olive-green, with orange spines and tubercles ; lateral lobes of pronotum and pleura with orange spots ; elytra dark steel-blue, olive-blue or olive-green, with yellow tessellated pattern, which varies, being narrow or wide ; hind wings crimson-red, in newly moulted specimens pale, in sexually mature intensely red ; carinulae of hind femur yellow ; hind tibia olive green, with yellow spines ; abdomen with alternating blackish and yellowish rings.

♀. As the male, but larger and more robust. Antenna 18-segmented. Subgenital plate in middle of posterior margin with narrow angular projection.

Length of body ♂ 43.0–55.0, ♀ 64.0–73.0 ; pronotum ♂ 10.5–13.6, ♀ 12.8–17.3 ; elytron ♂ 41.3–52.4, ♀ 50.4–63.2 ; hind femur ♂ 21.0–27.0, ♀ 24.6–31.2 mm.

The original description of *Phymateus puniceus* I. Bolivar was based on a male and female, and noted that they are preserved in the Paris Museum. At present only a female remains there with labels : (1) "Madagascar. Montagne Amboitrosy. Dr. Joly 1900" ; (2) "Sept." ; (3) in I. Bolivar's handwriting : "*Phymateus puniceus* Bol. I. Bolivar det. 1903". The word "Syntype" was added by a different hand and different ink. In the Madrid Museum there is a female specimen of *Phymateus puniceus* with I. Bolivar's determination label and with the recently added label "Allotype".

The male and two female specimens of *Phymateus buyssoni* I. Bolivar are preserved in the Paris Museum, all with labels : "Madagascar. Andevorante, A. Mathiaux.

1900". Also on the male is "*Phymateus buyssoni* Bol. Type" in I. Bolivar's handwriting, and on both females the labels "Type" are present but determination labels are absent.

The male specimen of *Phymateus buyssoni* var. *spinosus* I. Bolivar is also preserved

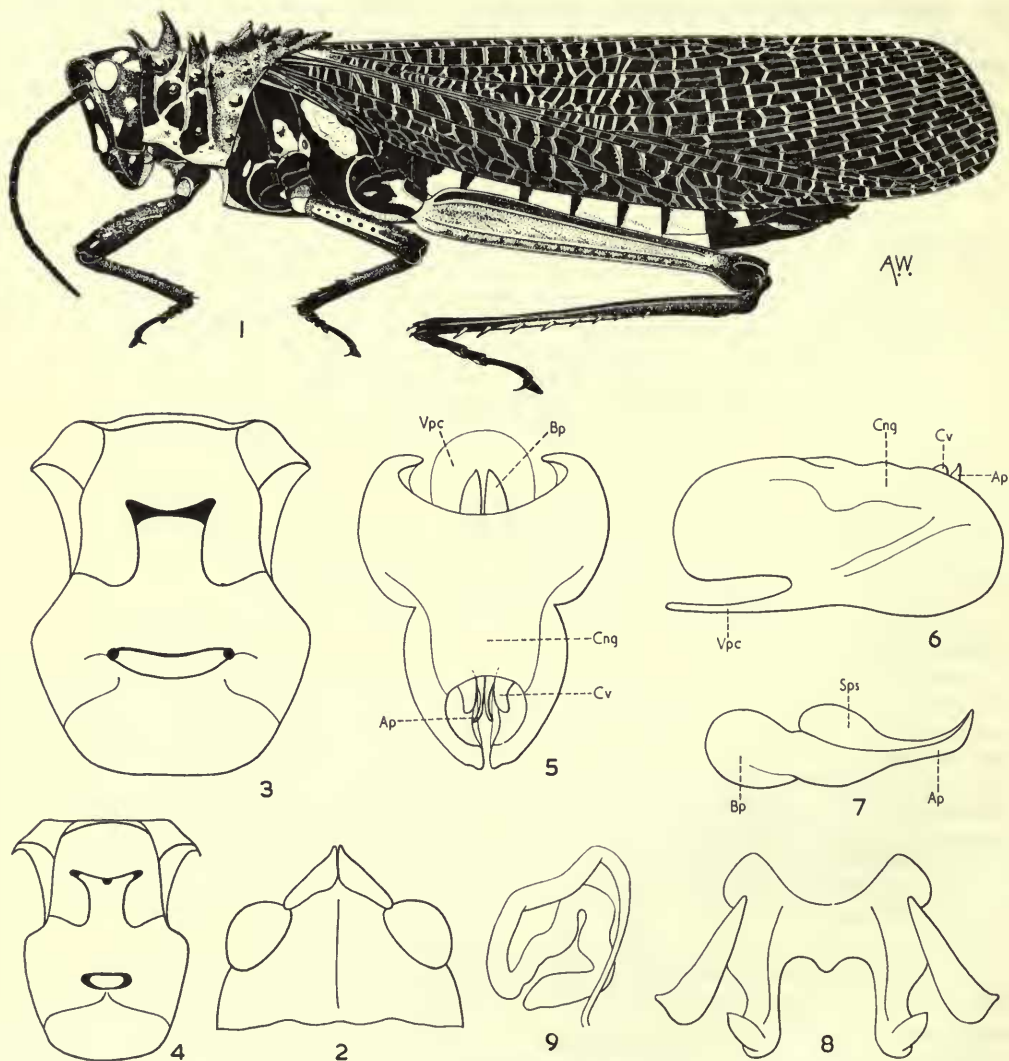


FIG. 1. *Phymateus saxosus* Coquerel, 1861. 1, female. 2, head from above. 3, meso- and metasternum, female. 4, the same, male. 5, phallic complex from above, epiphallus and ectophallic membrane removed. 6, the same, lateral view. 7, penis and spermatophore sac. 8, epiphallus. 9, spermatheca. Ap, apical valve of penis. Bp, basal valve of penis. Cng, cingulum. Cv, valve of cingulum. L, lobe. Scl, sclerotization. Sps, spermatophore sac. Vpc, ventral posterior process of cingulum. (This lettering is applicable to all figures.)

in the Paris Museum. It bears labels : (1) "Madagascar. A. Grandidier 1866"; (2) "*Phymateus buyssoni* var. *spinosus* Bol. I. Bolivar det. 1903. Type", in I. Bolivar's handwriting. On the same label the word "Lectotype" was added recently by a different hand and different ink. (3) "Lectotype. Det. D. K. McE. Kevan, 1960".

Also in the Paris Museum the male specimen, presumably the type of *Phymateus cardinalis*, is preserved, with labels : (1) "Madagascar. G. Grandidier"; (2) "Mahafaly"; (3) *Phymateus cardinalis* Bol. I. Bolivar det. 1903", in I. Bolivar's handwriting. The word "Type" written by a different hand and different ink was added later.

All the above mentioned specimens were studied by me and found conspecific.

I. Bolivar differentiated *Ph. puniceus* from *Ph. cardinalis* by the shape of the pronotum. For *Ph. puniceus* he stated : "Pronotum dorso sensim deplanato", and for *Ph. cardinalis* "Pronotum dorso postice sensim elevato". When series of material was studied this difference, originally small, became insignificant, as all intermediate forms were found. Acuteness of the spines of the pronotum is also variable, so that it is impossible to differentiate *puniceus* from *cardinalis* in a long series.

Ph. buyssoni differs only in the orange coloration of the dorsum of the pronotum. In all other respects it is the same as *Ph. puniceus* and *Ph. cardinalis*. *Ph. buyssoni* var. *spinosus* represents only an individual variation of the species, which does not exceed the range of variability of the species in respect of acuteness of spines.

When compared with the type of *Phymateus saxosus* Coquerel, 1861 (in Paris Museum) there is no doubt that it is the same species.

Madagascar Nord-Ouest : Mt. Tsaratanana, Ampanompia, viii.1951, 1 nymph, 1 ♀ (*J. Doucet*) ; Ankarafantsika, 1 ♀.

Madagascar Nord-Est : Station Agricole du Lac Alaotra, 30.xi.1947, 1 ♀ (*J. Doucet*).

Madagascar Ouest : 20 km. Sud Ankavandra, lambeau forestier, 1 ♂ (*R. Paulian*) ; Antsingy de Bekopaka, vii.1949, 1 ♀ (*R. Paulian*).

Madagascar Centre : Tananarive, Tsimbazaza, ix.1958, 1 ♀ ; Nosivola, RN3, 1 ♂ ; Ankazobe, P.K. 132 Rte. de Majunga, ix.1957, 2 ♂ (*J. Elie*) ; dct. de Miarinarivo, Fidiasiana, viii.1958, 1 ♂, 1 ♀ (*A. Robinson*) ; Ankazobe, Forêt d'Ambohitantly, 21-23.xii.1947, 2 ♂ ; Arivonimamo, 11.x.1948, 1 ♂ (*R.E.*).

Madagascar Est : Ankadimanga, Manjakandriana, xii.1957, 1 ♂ (*J. Elie*) ; Périnet, 2 ♂ ; Moramanga, 1 ♂ (*Gruvel*) ; Ambinanindrano, 50 km. W. of Mahanoro, 1915, 1 ♂ (*G. K. Kestell-Cornish*) ; Sandrakely, 25 km. Nord Ifanadiana, 3.i.1948, 1 ♀ (*G.V.*) ; Ambatofotirahana, km. 303 Rte. de Mananjary, 2 ♀.

Madagascar Sud-Ouest : Lac Iotry, 40 m., Morombe, vii.1957, 1 ♀ (*A. Robinson*).

Madagascar Sud : Fort Dauphin, Tsivory, Marotsiraka, xi.1959, 1 ♀ (*Randriamasy*) ; Ivohibe, Farafangana, 2 ♂, Forêt, Col d'Ivohibe, xi.1950, 1 ♂ ; Betroka, 18.vi.1948, 1 ♂, 1 ♀ (*J. de D. Ratoto*).

Phymateus madagassus Karsch, 1888
(Text-figs. 2, 3)

Phymateus grandidieri I. Bolivar, 1903 : 190, **syn. n.**

♂. Antenna 19-segmented, longer than head and pronotum together. Head above with median carinula.

General coloration brownish-orange to olive-green ; dorsum of pronotum orange-brown, olive-green, or brown ; spines and tubercles orange, yellowish, brown or reddish ; lateral

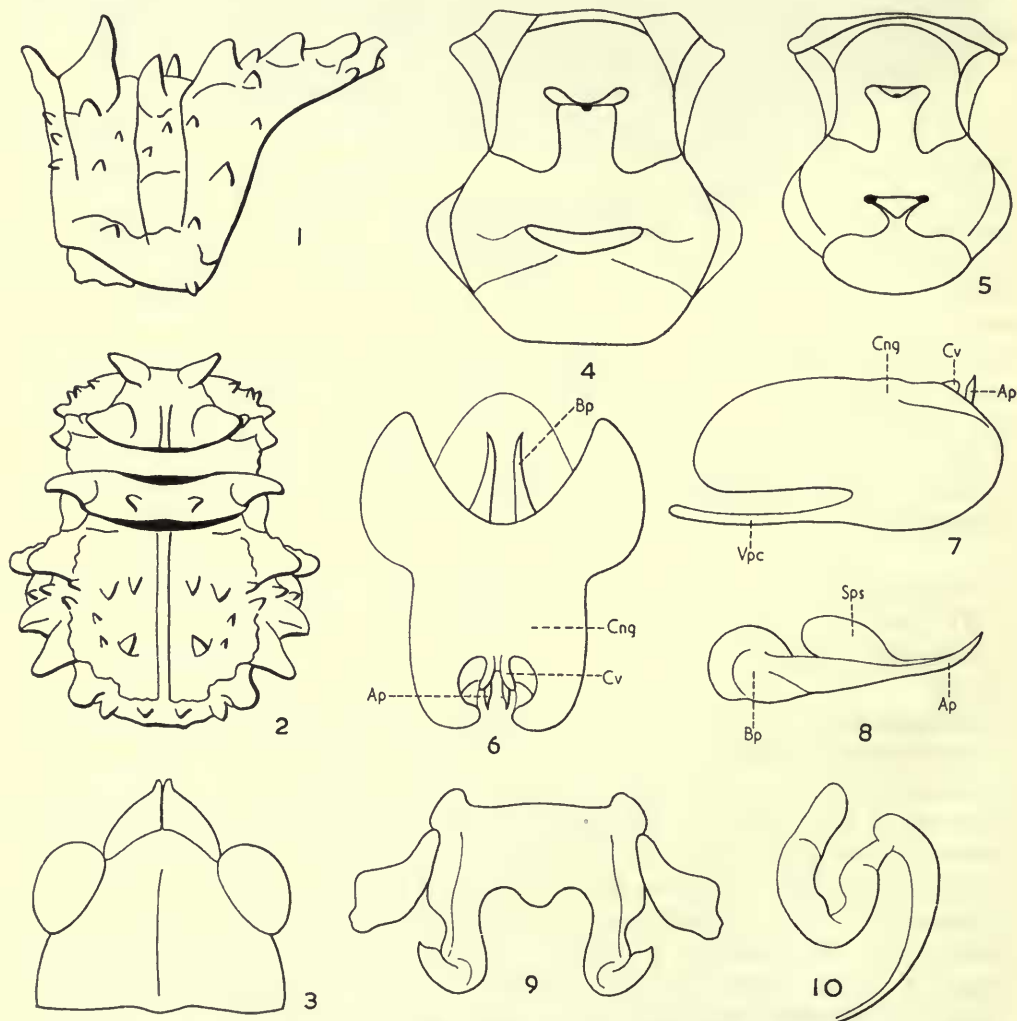


FIG. 2. *Phymateus madagassus* Karsch, 1888. 1, pronotum, lateral view (Type). 2, the same, from above. 3, head from above. 4, meso- and metasternum, female. 5, the same, male. 6, phallic complex from above, epiphallus and ectophallic membrane removed. 7, the same, lateral view. 8, penis and spermatophore sac. 9, epiphallus. 10, spermatheca.

lobe of pronotum and pleura with orange or yellow spots ; elytron brownish-orange or olive-green, tessellated pattern narrow, orange, frequently absent ; hind wing from pale orange to orange and orange-red ; tessellated pattern brownish ; hind femur olive-green or brownish, with yellow carinulae ; hind tibia bluish, spines orange or yellow ; abdomen with alternating yellow and bluish or brownish rings.

♀. As the male, but larger and more robust. Antenna 18 or 19-segmented. Subgenital plate in middle of posterior margin with narrow angular projection.

Length of body ♂ 43.0-51.0, ♀ 55.0-75.0 ; pronotum ♂ 11.4-12.5, ♀ 14.0-18.0 ; elytron ♂ 42.0-44.0, ♀ 49.8-58.5 ; hind femur ♂ 24.0-25.2, ♀ 27.3-30.2 mm.

The type of *Ph. madagassus* Karsch is a female completely discoloured by previous preservation in spirit, but the sculpture of the pronotum is intact. It is in the Berlin Museum and bears the label "Madagascar septentrional, occidental. I. M. Hildebrandt".

In the Muséum National d'Histoire Naturelle, Paris, there are male and female specimens of *Phymateus grandidieri* I. Bolivar with the labels : (1) "Madagascar, Grandidier 2855-90" ; (2) "*Phymateus grandidieri* Bol. I. Bolivar det. 1903", in the handwriting of I. Bolivar ; and (3) "*Phymateus grandidieri* Bol. Syntype. Det. D. K. McE. Kevan, 1960". The female bears labels : (1) "Madagascar. G. Grandidier 1899" ; (2) "Tulear, Ambolisatra" ; (3) "*Phymateus grandidieri* Bol. I. Bolivar det. 1903", in I. Bolivar's handwriting ; and (4) "Lectotype. Det. D. K. McE. Kevan, 1960".

Another female specimen of *Phymateus grandidieri* is preserved in the Madrid Museum and labelled "Cotype".

All the above mentioned specimens were examined by me and found conspecific.

Madagascar Nord : Dct. Diego Suarez, Montagne des Français, ii.1959, 1 ♀ (*A. Robinson*).

Madagascar Sud-Ouest : Besalampy, Ankazoabo, 5 ♂, 9 ♀ ; Sakaraha, Lambomakondro, iii.1956, 3 ♀ (*A. Robinson*).

Madagascar Sud : Fort Dauphin, viii.1948, 1 ♀ (*R. Paulian*) ; Tsivory 16.viii.1948, 3 ♂, 7 ♀ (*R. Paulian*).

The species varies in body size as well as in sculpture of pronotum, which may be represented by very sharp and long spines and numerous tubercles or by comparatively obtuse spines and less prominent tubercles. Coloration varies as described above.

The difference between *Ph. madagassus* and *Ph. saxosus* is mainly in coloration but partly in pattern which in *Ph. saxosus* is more definite. There are no structural differences between these two species which would exceed the range of their variability. Possibly they represent only populations of the same species.

PYRGOMORPHELLA I. Bolivar, 1904

Small or submedium size ; body slightly fusiform. Integument rugose. Antenna thick filiform, compressed at basal part, shorter than head and pronotum together. Fastigium of vertex horizontal, slightly convex, with angular or parabolic apex ; apical fastigial areolae well developed, with well developed marginal carinulae ; carinula of vertex present ; frons strongly oblique and incurved ; frontal ridge narrow, compressed between antennae, with

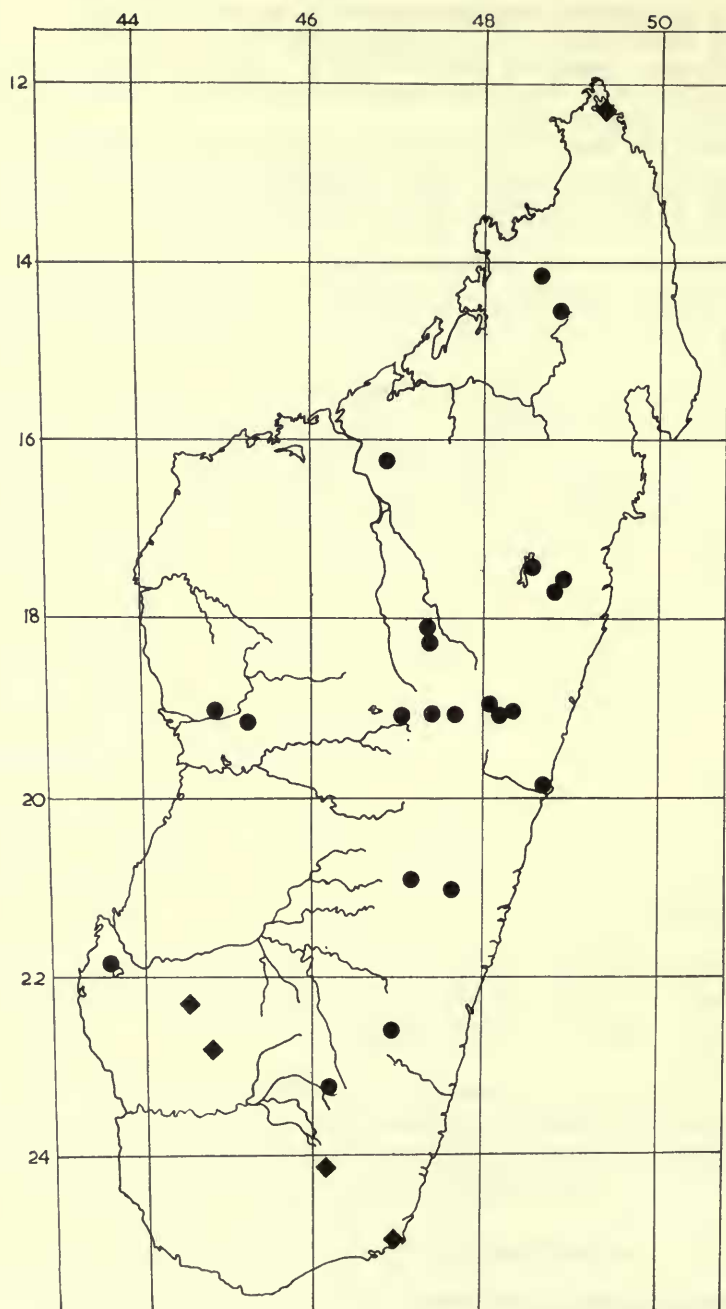


FIG. 3. Geographical distribution. ◆—*Phymateus madagassus* Karsch, 1888.
●—*Phymateus saxosus* Coquerel, 1861.

slit-like sulcus and sharp carinulae, below with shallow sulcus and low, obtuse carinulae ; row of postocular callosities well developed. Pronotum subcylindrical, strongly tuberculate ; median carina in prozona strong, in metazona sometimes obliterated ; lateral carinae well developed, irregular ; dorsum crossed by two sulci ; metazona about one third to one quarter of length of prozona, its posterior margin in middle roundly or angularly incurved. Prosternal process widely conical in male and collar-like in female. Mesosternal interspace longer than its width, close to metasternal, the two connected by lateral sutures. Elytra vestigial or lobiform. Tympanal organ present or absent. Hind femur slender. External apical spine of hind tibia absent or present. Arolium large. Male supra-anal plate elongate angular. Cercus conical at apex, slightly downcurved. Subgenital plate with rounded apex. Ovipositor moderately long, with curved valves ; lower valve with external, lateral projection.

Type species : *Pyrgomorphella sphenarioides* I. Bolivar, 1904.

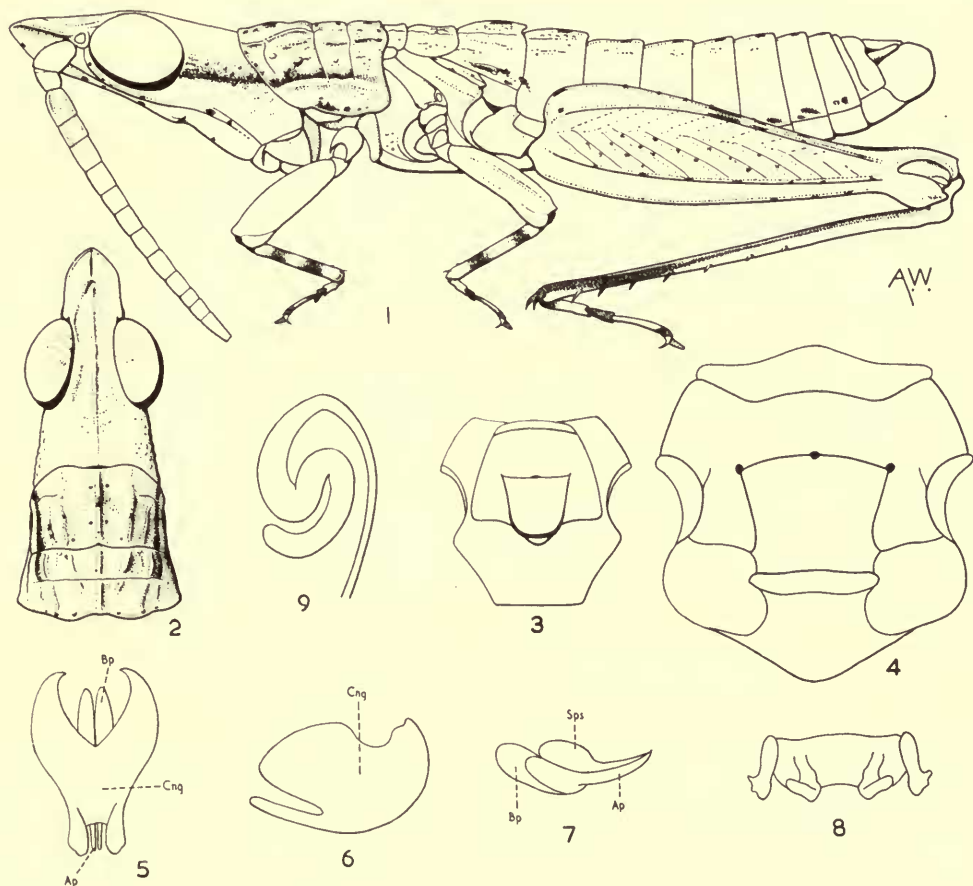


FIG. 4. *Pyrgomorphella minuta* sp. n. 1, male. 2, head and pronotum from above. 3, meso- and metasternum, male. 4, the same, female. 5, phallic complex from above, epiphallus and ectophallic membrane removed. 6, the same, lateral view. 7, penis and spermatophore sac. 8, epiphallus. 9, spermatheca.

Pyrgomorphella minuta sp. n.

(Text-fig. 4)

♂. Type. Small. Integument strongly rugose. Antenna 14-segmented. Fastigium of vertex half again as long as its width, with apex angular; carinula of vertex strong; head narrow conical; frons, in profile, incurved; compound eyes and ocelli relatively large. Median carina of pronotum strong along whole length; lateral carinae irregular; lower margin of lateral lobe oblique and sinuate. Prosternal process collar-like. Mesosternal interspace widening towards anterior end; metasternal interspace small, close to mesosternal. Elytra vestigial. Wings and tympanal organ absent. Lower lobes of hind knee angular. External apical spine of hind tibia absent.

Phallic complex: cingulum with deep excision at proximal end; valves of cingulum absent; basal valve of penis slightly widened; apical valve short, acute; spermatophore sac large. Epiphallus with wide bridge; lophi short, with large, obtuse hooks; dorso-lateral appendices short, stout, widened at apices.

General coloration greyish-brown; face, lower part of lateral lobe of pronotum and pleura dirty ochraceous; hind tibia in apical half blackish.

♀. Larger than male. Antenna 14-segmented. Fastigium of vertex more elongated than in male. Mesosternal interspace relatively wider; metasternal interspace short, transverse, as wide as mesosternal one. Ovipositor comparatively robust; subgenital plate with narrow-angular median projection.

Spermatheca with single diverticulum, which is widened and S-Curved.

Length of body ♂ 10.3–10.4, ♀ 16.0; pronotum ♂ 1.8–1.9, ♀ 3.0; hind femur ♂ 5.0, ♀ 7.0 mm.

Madagascar Sud-Ouest: Beloha, 100 m. Ambovomne, vi.1957, 13 ♂ (including type), 3 ♀ (*Andria* R.).

Type and paratypes in the Paris Museum. 3 ♂, 1 ♀ paratypes in the British Museum (Natural History).

This is the smallest species of the genus so far known. Since the genus *Pyrgomorphella* is rather heterogeneous and badly needs revision, it is possible that the new species represents a new and different genus. Provisionally, however, it is advisable to refer it to *Pyrgomorphella*.

Besides the smaller size of *Pyrgomorphella minuta* it differs from other species of the genus by the more slender and more elongated head, more elongated fastigium of vertex, more developed carinae of pronotum and by the structure of the phallic complex.

Pyrgomorphella madecassa I. Bolivar, 1904

(Text-fig. 5)

♀. Lectotype. Moderately small. Integument moderately rugose. Antenna 13-segmented. Fastigium of vertex with parabolic apex. Dorsum of pronotum rugose; median carina strong in prozona and weak in metazona; lateral carinae in prozona sinuate, in metazona excurved; metazona about one third of length of prozona, its posterior margin biarcuate, in middle angularly incurved. Elytron reaching first abdominal tergite, twice as long as its width, with rounded apex; wing slightly protruding under elytron. Tympanum absent. External apical spine of hind tibia absent. Subgenital plate with slightly excurved apex and angular projection in middle. Spermatheca narrow, S-curved, with single diverticulum.

General coloration olive-green. Postocular callosities ochraceous; hind wing reddish; along middle of abdomen a narrow light reddish stripe.

Length of body 18.5–20.5; pronotum 3.3–3.5; elytra 1.0–1.2; hind femur 7.8–8.0 mm.

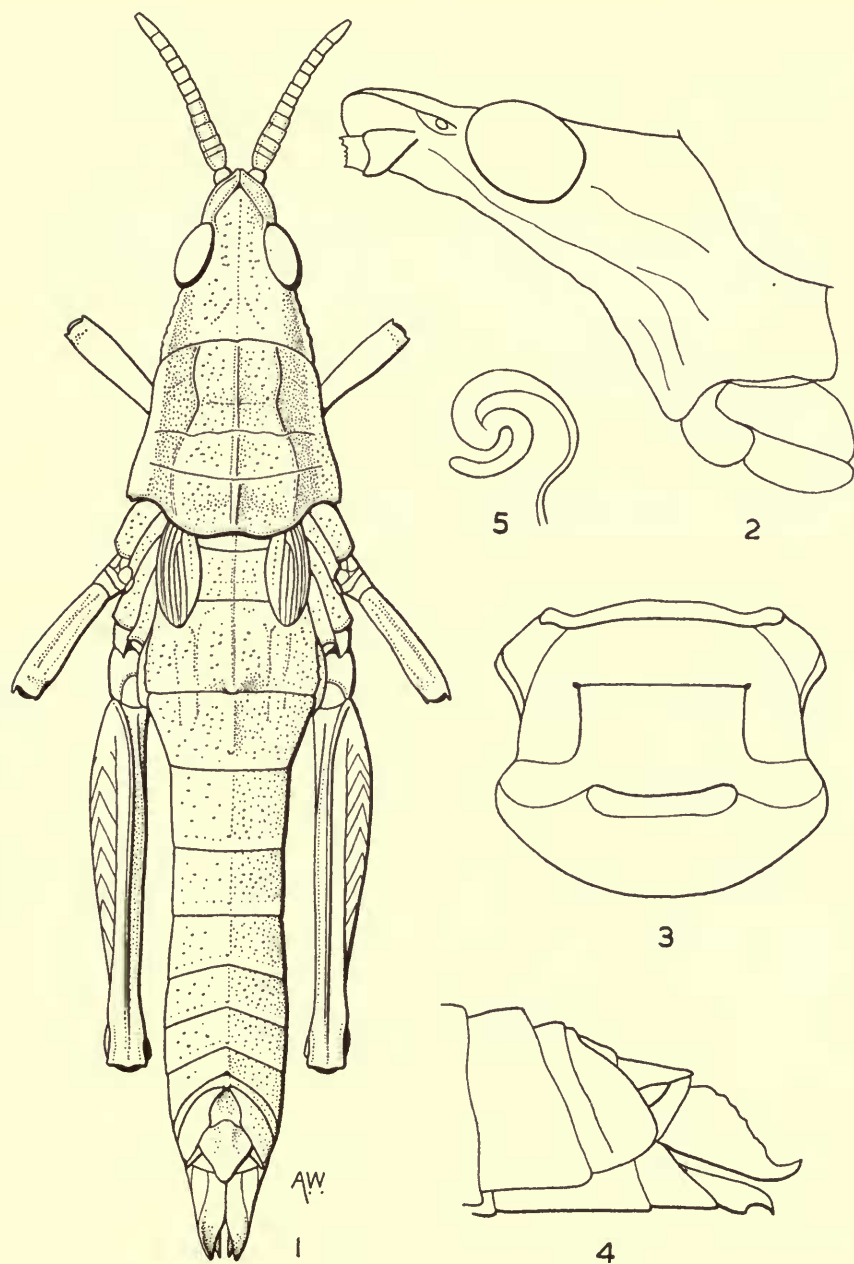


FIG. 5. *Pyrgomorphella madecassa* I. Bolivar, 1904. 1, female. 2, head, lateral view. 3, meso- and metasternum. 4, end of abdomen. 5, spermatheca.

The measurements of the lectotype deviate slightly from those given by I. Bolivar but this may be due to the less accurate instrument used by him.

He described *Pyrgomorphella madecassa* from a male and a female (or males and females) and remarked that the specimens are preserved in the Paris Museum. He does not designate the type. At present, only one female exists in the Paris Museum. The male is probably lost. The female specimen bears labels: "Museum Paris. Madagascar. Grandidier. 1502-92"; second label in I. Bolivar's handwriting—" *Pyrgomorpha madecassa* Bol. I. Bolivar det. 1903". The word "Type" is added on the label later in a different handwriting and in different ink. In all probability this specimen is one on which I. Bolivar's description was based. It is designated here as the lectotype.

Madagascar Centre: Plateau Soaindran, 2,090 m. Andringitra—Ambalavao, 15.i.1958, 1 ♀ (*R. Paulian*). Ambohitantely, Lot. i, 4.ii.1948, 1 ♀ (*P. Cachan*).

Madagascar Sud: Réserve nat. iii, Ambatovositra, Andranomelaza, xii.1956, 1 ♀; iii.1956, 1 ♀ (*P. Saga*). Oues du Faux, xii.1951, 1 ♀ (*R. Paulian*).

The small series of female specimens in my possession varies slightly in body size and in general coloration from olive-green to brown. The male is unknown to me.

RUBELLIA Stål, 1875

Of medium size, body fusiform. Integument rugose and tuberculate. Antenna filiform, shorter than head and pronotum together. Head narrow, acutely conical, with longitudinal carinula above; fastigium of vertex more than twice as long as its width, narrowing forwards with apex rounded, fastigial areolae hardly traceable; frons strongly incurved; frontal ridge low, narrow, shallowly sulcate, compressed between and above antennae, roundly merging with fastigium of vertex. Compound eyes moderately small, strongly convex, almost hemispherical. Ocelli large. Pronotum widening backwards, tuberculate; dorsum slightly flattened, crossed by four sulci; median carina low, obtuse, lateral carinae absent; metazona slightly shorter than prozona, its posterior margin widely rounded. Prosternal process low, tubercle-like. Metasternal interspace distant from mesosternal. Elytra and wings strongly shortened, lateral, or fully developed. Tympanal organ well developed. Hind femur narrow, exceeds end of abdomen. External apical spine of hind tibia present. Arolium large. First abdominal tergite of female in middle of posterior part slightly inflated, at posterior margin with tubercle-like projection. In male, second abdominal tergite at anterior margin with transverse invagination. Posterior margin of last abdominal tergite of male deeply excised. Supra-anal plate small, slightly longer than cerci; cercus small, straight, compressed, angular; subgenital plate short, with upcurved, attenuate apex. Ovipositor short, robust, with curved valves.

Phallic complex: cingulum widely pear-shaped; valves of cingulum short, valves of penis curved; basal valve moderately widened; apical valve straight. Spermatophore sac large. Epiphallus with short bridge and rounded anterior projections; lophi short, with large hooks; dorso-lateral appendices short, strongly widened towards apex.

Spermatheca with single, S-curved diverticulum.

Type species: *Rubellia nigrosignata* Stål, 1875.

Rubellia nigrosignata Stål, 1875 (Text-fig. 6)

♂. Antenna 17 or 18-segmented. Integument shiny. Fastigium of vertex at apex widely rounded, its sides undulated; lateral carinae of frontal ridge low, obtuse. Angles of lateral

lobe of pronotum rounded. Mesosternal interspace longer than its width, with deep apical foveolae and slightly incurved sides; metasternal interspace small, oval. Elytron lobiform, lateral, slightly exceeding first abdominal tergite and covering tympanum, with narrow, slightly upcurved apex, venation strongly reduced, reticulation dense; wing shorter than elytron. Lower lobes of hind knee on both sides with angular apices. Supra-anal plate short, angular, with parabolic apex.

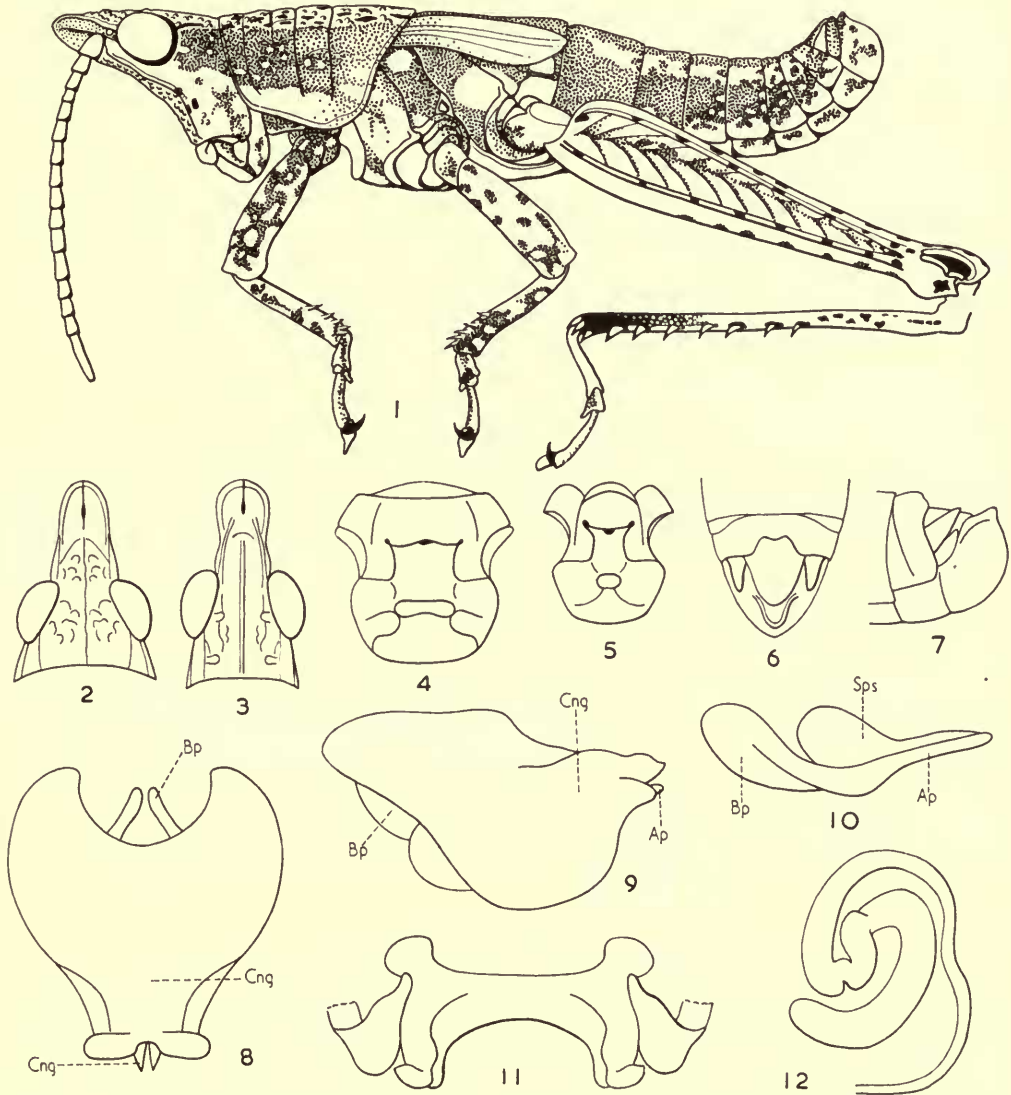


FIG. 6. *Rubellia nigrosignata* Stål, 1875. 1, male. 2, head from above, female. 3, the same, male. 4, meso- and metasternum, female. 5, the same, male. 6, end of male abdomen, from above. 7, the same, lateral view. 8, phallic complex from above, epiphallus and ectophallic membrane removed. 9, the same, lateral view. 10, penis and spermatophore sac. 11, epiphallus. 12, spermatheca.

General coloration yellow or olive yellow, with scattered black spots ; antenna yellow with black rings ; black stripe running from posterior margin of eye, through middle of lateral lobes of pronotum, down to base of hind femur, interrupted by round yellow spots, which are largest at posterior margin of lateral lobe of pronotum and at base of hind femur ; dorsum of pronotum with scattered, small, black spots ; elytron pinkish or greenish ; wing bright red ; all legs yellow with numerous black spots.

♀. Larger than male. Antenna 15 or 16-segmented. Apex of fastigium of vertex rounded, its sides slightly converging forwards. Mesosternal interspace wider than its length, with deep foveolae ; metasternal interspace wide, transverse. Elytra reaching middle of third abdominal tergite. Upper external margin of upper valve of ovipositor slightly, irregularly serrated ; lower valve with angular lateral projection. Posterior margin of subgenital plate with acutangular projection. In other respects as the male.

Forma *macroptera*. Differs by the fully developed elytra and wings, exceeding end of abdomen. This occurs occasionally in both sexes in series of the basic form. No other morphological differences exist.

Length of body ♂ 17.7–25.0, ♀ 27.0–28.5 ; pronotum ♂ 4.2–6.3, ♀ 7.0–7.3 ; elytron (microp-terous) ♂ 3.5–5.2, ♀ 7.0–8.1 ; hind femur ♂ 9.3–13.0, ♀ 12.7–13.0 mm.

Rubellia nigrosignata was described by Stål from the male and female. Here the male is designated as the lectotype.

Type locality : " Madagascar ".

Madagascar Nord-Ouest : Andranofasika, Ampijoroa, 1 ♀.

Madagascar Nord-Est : Ile Sainte-Marie, Ambatoroa, v.1959, 1 ♀ (*Razafiman-dimby*).

Madagascar Centre : Arivonimamo, 10.x.1948, 1 ♂, 1 ♀ (*R.E.*) ; La Mandraka, iii.1954, 2 ♀.

Madagascar Est : Sambava, Réserve nat. XII, Marojejy, Andrakata, ii.1959, 1 ♀ (*P. Soga*), Route de Tamatave, 10.x.1948, 1 ♀ (*P. Cachan*) ; Perinet, iv.1948, 3 ♂, 9 ♀ (*R.F.*) ; Ranomafana, Ifanadiana, 1 ♀ ; Sakavondro, 40 m., Fort Dauphin, vi.1957, 1 ♀ (*A. Robinson*).

Madagascar Sud : Andohahelo, Beroanga, 1 ♂ (*R. Paulian*) ; Androy, Tranomaro, ii. 1954, 1 ♂ (*R. Paulian*) ; Fort Dauphin, 1 ♂, 1 ♀ (*R. Paulian*) ; Amborombe, iv.1954, 3 ♀ (*R. Paulian*).

This species varies in body size, particularly the males, and in coloration. Some of the specimens are olive-green and the black pattern is less distinct.

***PSEUDORUBELLIA* gen. n.**

Of medium size, body slightly fusiform. Integument finely rugose. Antenna filiform, longer than head and pronotum together. Head conical, above with longitudinal carinula ; fastigium of vertex slightly longer than its width, narrowing towards apex ; fastigial areolae hardly traceable ; frons moderately incurved ; frontal ridge low, narrow, shallowly sulcate, angularly merging with fastigium of vertex. Compound eyes moderately small, strongly convex, almost hemispherical. Ocelli moderately small. Pronotum widening backwards, dorsum convex, crossed by three sulci, median carina obtuse along whole length or raised in metazona ; lateral carinae absent ; metazona shorter than prozona, slightly raised or raised and inflated, its posterior margin roundly excurved. Prosternal process low, pyramidal. Metasternal interspace distant from mesosternal. Elytra and wings lobiform, lateral or

shortened, reaching fifth abdominal tergite and overlapping on dorsum. Tympanal organ well developed. Hind femur moderately narrow. External apical spine of hind tibia present. Arolium large. Ovipositor short, slender with valves slightly curved at apices.

Type species : *Rubellia brancsiki* I. Bolivar, 1904.

I. Bolivar described *Rubellia brancsiki* from a single male specimen, and a new species based on females is described below. Studying the types led to the conclusion that it is not possible to regard either species as congeneric with *Rubellia nigrosignata* and the new genus is erected for them.

The two genera differ as follows :

- 1 (2) Body fusiform. Integument rugose and tuberculate. Head narrow, acutely conical ; fastigium of vertex more than twice as long as its width ; frons strongly incurved. Dorsum of pronotum flattened ; metazona not raised. Prosternal process tubercle-like. Micropterous or macropterous

RUBELLIA.

- 2 (1) Body slightly fusiform. Integument finely rugose. Head widely conical ; fastigium of vertex slightly longer than its width ; frons moderately incurved. Dorsum of pronotum cylindrically convex ; metazona raised or inflated. Prosternal process pyramidal. Micropterous and brachypterous.

PSEUDORUBELLIA

No doubt a study of the phallic complex would provide more definite characters for the separation of these genera, but unfortunately the end of the abdomen of Bolivar's male type is broken and lost and there are no more male specimens known. However, the general appearance of the new genus is so strikingly different that to keep them together would lead to confusion.

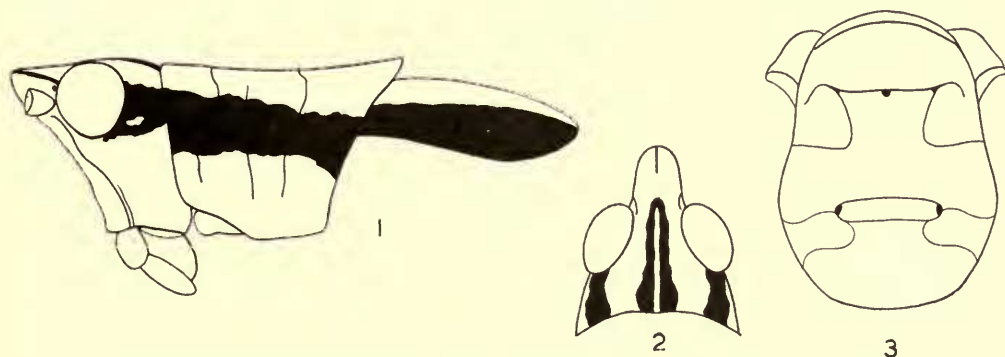


FIG. 7. *Pseudorubellia brancsiki* (I. Bolivar, 1904), type. 1, head, pronotum and elytron, lateral view. 2, head from above. 3, meso- and metasternum.

KEY TO SPECIES

- 1 (2) (♂) Metazona of pronotum slightly raised, median carina low over whole length. Posterior angle of lateral lobe of pronotum rounded. Elytra lobiform, lateral ***brancsiki*** I. Bolivar
- 2 (1) (♀) Metazona of pronotum inflated, median carina raised. Posterior angle of lateral lobe of pronotum angular, attenuate and slightly excurved. Elytra shortened, overlapping on dorsum ***thoracica*** sp. n.

Pseudorubellia brancsiki (I. Bolivar, 1904)
(Text-fig. 7)

♂. Type. (Redescription.) Of medium size. Integument shiny. Antenna 18-segmented. Apex of fastigium of vertex parabolic; fastigial furrow short; lateral carinae of frontal ridge low, obtuse. Median carina of pronotum low, obtuse over whole length; metazona slightly raised; angles of lateral lobes rounded. Mesosternal interspace wider than its length, slightly widened forwards; metasternal interspace short, strongly widened, transverse. Elytron lobiform, lateral, covering tympanum, slightly exceeds first abdominal tergite and narrowing towards subacute apex. Wings vestigial. Lower lobes of hind knee angular. General coloration olive-green; antenna brownish; head orange-yellow, above with blackish longitudinal stripe; blackish postocular stripe present, enclosing a small yellowish spot; labrum black, with yellow spots; pronotum olive-green; upper part of lateral lobe with blackish longitudinal stripe; thorax with black and yellow spots; anterior half of elytron blackish, posterior half greenish; abdomen above with narrow yellowish median stripe; legs olive green; hind knee blackish; hind tibia and spines blackish.

Length of body 27.0; pronotum 6.5; elytron 6.0; hind femur 14.0 mm.

Only the male type in Madrid Museum is known. The end of the abdomen of the type is broken.

Type locality: Madagascar, Diego Suarez.

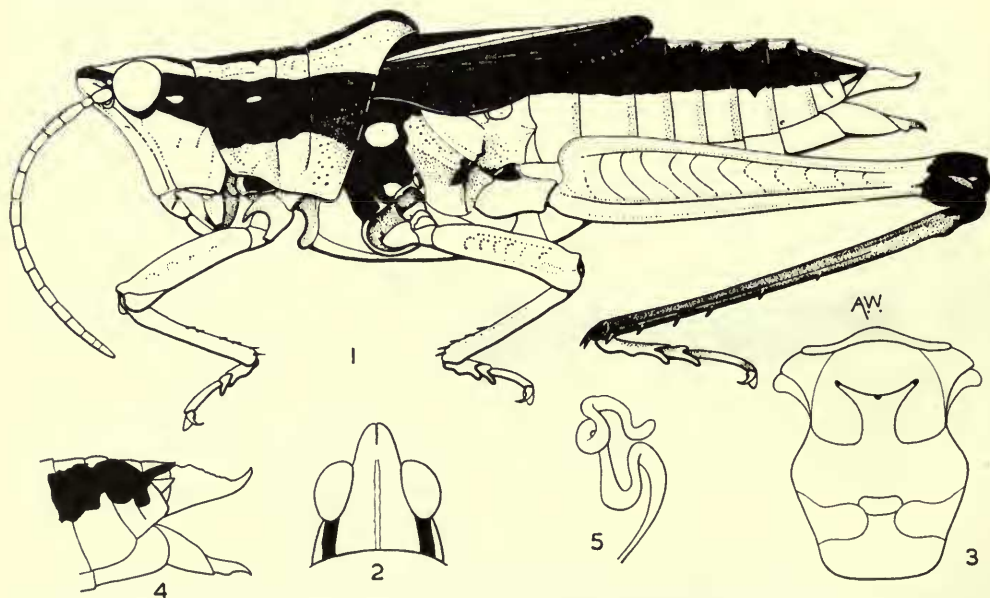


FIG. 8. *Pseudorubellia thoracica* sp. n. 1, female, type. 2, head from above. 3, meso- and metasternum. 4, end of abdomen. 5, spermatheca.

Pseudorubellia thoracica sp. n.
(Text-fig. 8)

♀ Type. Of medium size. Integument shiny. Antenna 18-segmented. Apex of fastigium of vertex angular; fastigial furrow short; lateral carinae of frontal ridge low, obtuse. Metazona of pronotum in posterior part inflated, forming near posterior edge a tubercle-like

projection, median carina raised, posterior angle of lateral lobe of pronotum slightly attenuate and excurved. Mesosternal interspace longer than its width, with strongly incurved sides; metasternal interspace short, more or less oval in shape. Elytra exceed middle of fourth abdominal tergite, overlapping on dorsum, venation and reticulation rough, reduced. Wings slightly shorter than elytron. Lower lobes of hind knee angular. Supra-anal plate simple, angular; cercus short, compressed, narrow angular; subgenital plate in middle of posterior margin with acutangular projection; upper margins of upper valve of ovipositor slightly serrated. Spermatheca with single twisted diverticulum.

General coloration ochraceous-brown; antenna brownish; head olive-ochraceous; edges of fastigium of vertex and postocular stripe black, the latter enclosing a small yellowish spot; prozona of pronotum in posterior two thirds with blackish spot; median carina in metazona blackish; lateral lobe, in upper part, with blackish longitudinal stripe; pleura ochraceous with black spot enclosing yellowish small spot; elytron bluish-black with ochraceous stripe in vannal fold; wing bluish; hind femur ochraceous; hind knee blackish; hind tibia olive-green. Male unknown.

Length of body 25.6-29.5; pronotum 7.0; elytron 8.5-9.2; hind femur 14.0-15.0 mm.

Madagascar Nord-Ouest: Ampijoroa, 170 m. Ankarafantsika, i.1957, 1 ♀ (type). Ampijoroa, Tsaramandroso, 1 ♀. Morondava, forêt sud de Befasy, i.1956, 1 ♀ (*R. Paulian*). Type and one paratype in Paris Museum. One paratype in the British Museum (Natural History).

There is a possibility that *Pseudorubellia thoracica* represents the female of *Pseudorubellia brancsiki*. They are, however, so different in many respects that for the time being it is advisable to consider them as separate species.

CAPRORHINUS Saussure, 1899

Of medium size, body fusiform. Integument finely rugose. Antenna thick filiform, or slightly widened in basal part, shorter or longer than head and pronotum together. Head acutely conical; fastigium of vertex elongated, with parabolic or angular apex; fastigial areolae poorly developed; weak carinula of vertex present; frons in profile strongly incurved; frontal ridge narrow, low, shallowly sulcate, with low, obtuse lateral carinulae, between and in front of antennae lamelliformly compressed and sulcus deepened. Eye small, oval, strongly convex. Pronotum subcylindrical, slightly constricted in middle and slightly widening backwards; weak median carina present, lateral carinae absent; dorsum crossed by two sulci; metazona much shorter than prozona, its posterior margin angularly or roundly incurved; lower margin of lateral lobe oblique. Prosternal process low, pyramidal. Mesosternal interspace narrow, in male twice or more as long as its width. Elytra vestigial, scale-like. Tympanal organ in male small, open, or vestigial, in female vestigial. Male abdomen, between first and second tergite, with short, narrow slit. In female metanotum and first abdominal tergite inflated, in middle with large projection, protruding upwards and partly backwards, tooth-like, with soft integument. Hind femur moderately narrow; lower lobes of hind knee slightly attenuate, angular. External apical spine of hind tibia present. Arolium large. Supra-anal plate in male small, narrow; in female large, angular. Male cercus moderately long, compressed, in- and downcurved in apical half; in female short, compressed, angular. Male subgenital plate short, in profile with rounded or straight apex, slightly protruding upper part and pair of lateral tubercles near apex in upper part; in female slightly trilobate with acutangular middle lobe. Ovipositor short, robust, with valves curved at apices.

Phallic complex: cingulum strongly sclerotized, from above pear-shaped; valves of cingulum moderately large; basal valve of penis expanded, up- and excurved; apical valve narrow, simple, with subacute apex, spermatophore sac large. Epiphallus of variable shape.

Spermatheca with single, vermicular diverticulum.

Type species : *Caprorhinus fusiformis* Saussure, 1899.

Five species of this genus are known at present, four of them from Madagascar and one from Comoro Is. Males are known for all of them, but females only for three.

In general appearance all the species are rather similar, but differ in the shape of the fastigium of the vertex, in the external parts of the genitalia and especially in

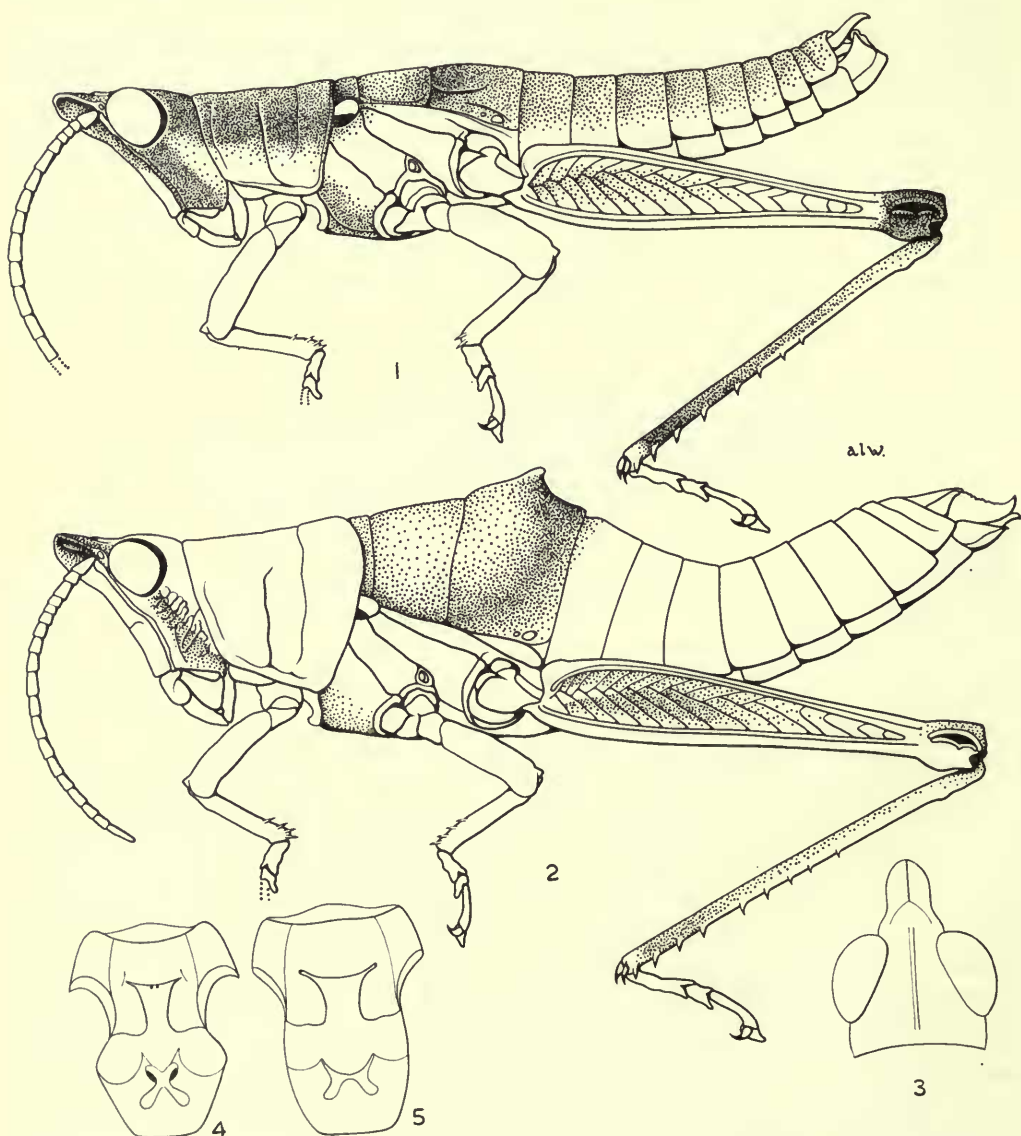


FIG. 9. *Caprorhinus zolotarevskyi* Uvarov, 1929. 1, male. 2, female. 3, head above, male. 4, meso- and metasternum, male. 5, the same, female.

the phallic complex. It should be pointed out that the three known females of three species are so similar in appearance that they may be easily confused.

By the peculiar structure of the first abdominal tergite in females, *Caprorhinus* is rather isolated from the other genera of the family. However, a certain similarity in general appearance (except the projection on the first abdominal tergite in females) and in the phallic complex between *Caprorhinus* and the Indian genus *Colemania* I. Bolivar, 1910 suggests that these genera may be remotely related or at least affinity between them is more pronounced than between *Caprorhinus* and other genera.

KEY TO SPECIES

Males

- 1 (2) Sides of fastigium of vertex above, in basal part, strongly excurved. Posterior margin of last abdominal tergite sinuate (Text-figs. 9, 10) *zlotarevskyi* Uvarov
- 2 (1) Sides of fastigium of vertex above, in basal part, moderately or slightly excurved. Posterior margin of last abdominal tergite bilobate or excised in middle.
- 3 (4) Fastigium of vertex long and narrow. Posterior margin of pronotum deeply, roundly excised (Text-fig. 11). *rostratus* Uvarov
- 4 (3) Fastigium of vertex relatively shorter and less narrow. Posterior margin of pronotum slightly, widely incurved.
- 5 (8) Elytron as long as or shorter than its width. Larger size.
- 6 (7) Fastigium of vertex twice as long as its width at the middle. Cercus more robust. Larger size (Text-fig. 12) *fusiformis* Saussure
- 7 (6) Fastigium of vertex three times as long as its width at the middle. Cercus less robust. Smaller size (Text-fig. 13) *minor* Uvarov
- 8 (5) Elytron longer than its width. Small size (Text-fig. 14) *squamipennis* Bruner

***Caprorhinus zlotarevskyi* Uvarov, 1929**
(Text-figs. 9, 10)

♂ Type. (Redescription.) Comparatively large. Integument moderately rugose. Fastigium of vertex twice as long as its width in middle, its sides at basal part strongly excurved, sides of upper part parallel, apex parabolic; upper, compressed part of frontal ridge narrow, angularly merging with fastigium of vertex. Median carina of pronotum weak; metazona one third of length of prozona, its posterior margin angularly incised in middle. Prosternal process with subacute apex. Protruding part of elytron about as wide as its length. Tympanal organ small, open. Last abdominal tergite large, its posterior margin slightly protruding, incurved in middle. Supra-anal plate small, angular, shorter than cercus; cercus compressed, widened in basal part, tapering towards apical part, apex acute, incurved and downcurved; subgenital plate with lateral ridge-like fold ending in upper part with small tubercle.

Phallic complex: valves of cingulum of moderate size; penis valves almost straight; basal valve widened and slightly excurved; apical valve slightly upcurved, slender. Epiphallus with wide bridge and moderately large anterior projection; lophi short, robust, with strong hooks; dorso-lateral appendices as long as epiphallus with club-like apices.

General coloration brown; face ochraceous; head with postocular stripe; head and pronotum above with median ochraceous stripe; lower part of lateral lobe ochraceous; elytron bright red, its lower external part black; hind knee brown; kind tibia brown, with purplish tinge; spines ochraceous with brown apices.

♀. Larger than the male and more robust. Metanotum and first abdominal tergite inflated; projection on first abdominal tergite large, compressed, with angular apex. Tympanal organ

vestigial. Valves of ovipositor short, robust ; upper external margin of upper valve roughly serrated. Spermatheca vermicular, with single diverticulum. General coloration olive brown. In other respects as the male.

Length of body ♂ 29.0, ♀ 33.0 ; pronotum ♂ 4.5, ♀ 5.0 ; hind femur ♂ 14.5, ♀ 14.0 mm.

Type locality : S.E. Madagascar, between Bazaka and Tongolory, Tuléar. Type in British Museum (Natural History).

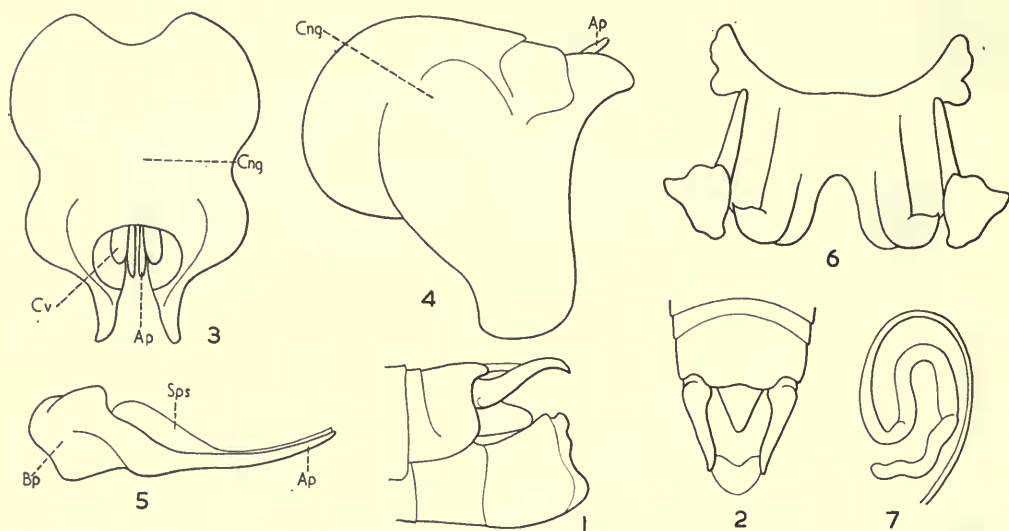


FIG. 10. *Caprorhinus zolotarevskyi* Uvarov, 1929. 1, end of male abdomen, lateral view. 2, the same, from above. 3, phallic complex from above, epiphallus and ectophallic membrane removed. 4, the same, lateral view. 5, penis and spermatophore sac. 6, epiphallus. 7, spermatheca.

Caprorhinus rostratus Uvarov, 1929 (Text-fig. 11)

♂ Type. (Redescription.) Comparatively large. Integument finely rugose. Antenna 21-segmented, apical segment at apex slightly incised. Fastigium of vertex narrow, elongated, three times as long as its width in middle, its sides at basal part slightly excurved, in apical two thirds parallel, apex parabolic ; upper, compressed part of frontal ridge narrow, acutangularly merging with fastigium of vertex. Median carina of pronotum hardly traceable ; metazona one fourth of length of prozona, its posterior margin in middle deeply, roundly incurved. Prosternal process short with subacute apex. Protruding part of elytron longer than its width. Tympanal organ small, open. Last abdominal tergite large, its posterior margin shallowly trilobate. Supra-anal plate small, narrow, shorter than cerci, with obtuse apex ; cercus compressed, widened in basal part, slightly incurved and downcurved in apical part, apex acute ; subgenital plate slightly compressed, in profile almost square.

Phallic complex : valves of cingulum large ; valves of penis straight ; basal valve widened, apical valve straight, slender. Epiphallus with very large bridge and moderately large anterior projections ; lophi shorter than bridge, comparatively narrow, with large hooks ; dorso-lateral appendices short, with excurved, club-like apices.

General coloration brownish-ochraceous ; elytron red, its anterior external part black ;

crescent of hind knee brown ; hind tibia with lower side greenish, upper side brownish ; spines ochraceous, with brown apices. Female unknown.

Length of body 28.0 ; pronotum 4.0 ; hind femur 14.0 mm.

Only male type is known.

Type locality : S.E. Madagascar, Vohimarina, Tongolory, Tuléar. Type in British Museum (Natural History).

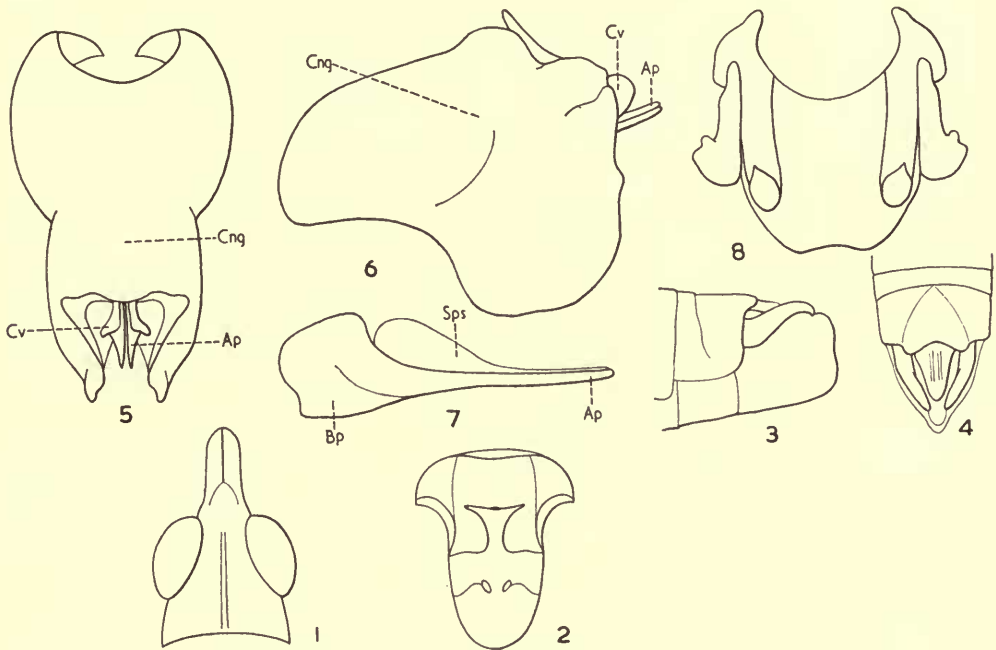


FIG. 11. *Caprorhinus rostratus* Uvarov, 1929. ♂ type. 1, head from above. 2, meso- and metasternum. 3, end of abdomen, lateral view. 4, the same, from above. 5, phallic complex from above, epiphallus and ectophallic membrane removed. 6, the same, lateral view. 7, penis and spermatophore sac. 8, epiphallus.

***Caprorhinus fusiformis* Saussure, 1899**
(Text-fig. 12)

♂ Type. (Redescription.) Comparatively large. Integument rugose. Fastigium of vertex twice as long as its width in middle, its sides at base moderately excurved, sides of its apical two thirds parallel, apex parabolic ; upper, compressed part of frontal ridge moderately high, angularly merging with fastigium of vertex. Median carina of pronotum hardly traceable ; metazona less than half length of prozona, its posterior margin widely and very slightly incurved. Prosternal process with subacute apex. Protruding part of elytron slightly wider than its length, rounded. Tympanal organ small, open. Last abdominal tergite large, its posterior margin shallowly bilobate, shallowly incurved in middle ; supra-anal plate small, angular, shorter than cerci ; cercus compressed, with comparatively wide basal part, tapering towards apex, strongly incurved and slightly downcurved at apical part, apex obtuse. Subgenital plate with lateral, ridge-like formation ending in upper part with small tubercle.

Phallic complex : valves of cingulum comparatively large ; penis valves angularly curved in middle ; basal valve widened and slightly excurved ; apical valve curved and comparatively robust. Epiphallus with comparatively wide bridge, and large almost square anterior projections ; lophi wide, short, with large hooks ; dorso-lateral appendices short, robust, curved, with club-like apices.

General coloration brownish (specimen discoloured by previous preservation in spirit) ; basal external part of elytron black, rest of elytron probably was red ; internal and external crescents of hind knee blackish.

Length of body 28.0 ; pronotum 5.5 ; elytron 1.1 ; hind femur 15.2 mm.

"Madagascar". Only the type is known.

It was believed that the type of this species was lost, but it has been discovered by Dr. D. Keith McE. Kevan (1962) in the Paris Museum.

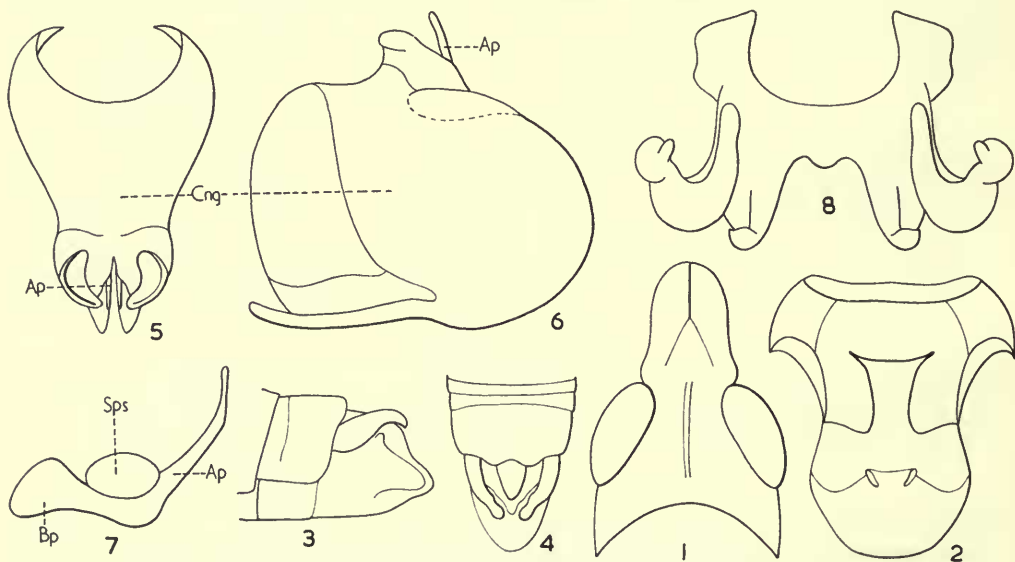


FIG. 12. *Caprorhinus fusiformis* Saussure, 1899. ♂ type. 1, head from above. 2, meso- and metasternum. 3, end of abdomen, lateral view. 4, the same, from above. 5, phallic complex from above, epiphallus and ectophallic membrane removed. 6, the same, lateral view. 7, penis and spermatophore sac. 8, epiphallus.

***Caprorhinus minor* Uvarov, 1929**
(Text-fig. 13)

♂ Type. (Redescription.) Comparatively small. Integument finely rugose. Fastigium of vertex three times as long as its width in middle, its sides at basal third moderately excurved, in apical two thirds slightly convergent, apex angular. Upper, compressed part of frontal ridge narrow, acutangularly merging with fastigium of vertex and slightly excised in apical part. Median carina of pronotum weak. Metazona less than one third length of prozona, its posterior margin slightly incurved. Prosternal process with subacute apex. Protruding part of elytron wider than its length. Tympanal organ small, open. Last abdominal tergite large, its posterior margin bilobate, deeply incurved in middle ; supra-anal plate small, shorter than

cerci, with apex sinuate ; cercus compressed, widened in basal part, narrowed towards apex, slightly incurved and downcurved in apical part, apex subacute ; subgenital plate with lateral, ridge-like formation.

Phallic complex : valves of cingulum large ; valves of penis straight ; basal valve widened and excurved ; apical valve straight and slender. Epiphallus with large bridge, weakly sclerotized in middle and large, narrow, incurved anterior projections ; lophi fused to bridge, with large, narrow hooks ; dorso-lateral appendices short, narrow, with large, club shaped apices.

General coloration olive-brown ; head, pronotum, meso-metanotum and first abdominal tergite above with ochraceous stripe ; face ochraceous ; ochraceous stripe running from eye, through lower part of lateral lobe of pronotum, up to base of hind femur ; elytron red, its anterior external part black ; crescent of hind knee blackish on both sides ; hind tibia with lower side olive-green, upper side brownish ; spines ochraceous, with brown apices.

♀. Larger than male. Integument more rugose. Antenna 21-segmented. Metanotum and first abdominal tergite inflated ; projection on first abdominal tergite comparatively small, with rounded apex. Tympanal organ vestigial. Valves of ovipositor short, robust, with acute apices ; upper external margin of upper valve roughly serrated. Spermatheca vermicular, with single diverticulum. General coloration olive-brown or greenish. In other respects as the male.

Length of body ♂ 24.0, ♀ 30.0-34.0 ; pronotum ♂ 3.5, ♀ 4.6-5.0 ; hind femur ♂ 12.5, ♀ 13.3-13.6 mm.

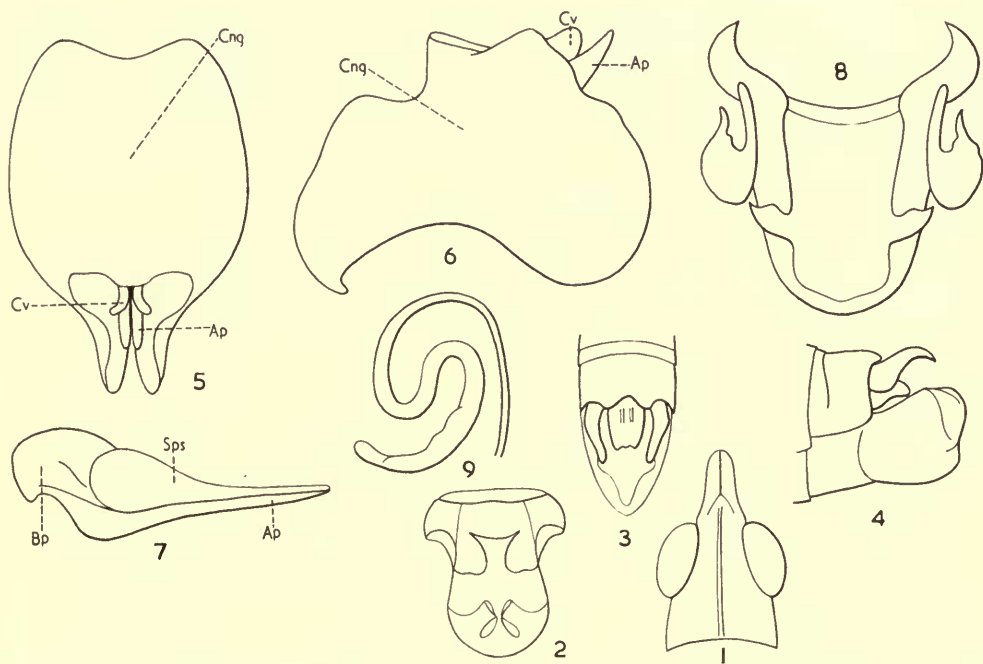


FIG. 13. *Caprorhinus minor* Uvarov, 1929. ♂ type. 1, head from above. 2, meso- and metasternum. 3, end of abdomen, from above. 4, the same, lateral view. 5, phallic complex from above, epiphallus and ectophallic membrane removed. 6, the same, lateral view. 7, penis and spermatophore sac. 8, epiphallus. 9, spermatheca.

Type locality : S.E. Madagascar, Vohimarina, Tongolory, Tuléar. Type in British Museum (Natural History).

Madagascar Ouest : Morondava, forêt sud de Befasy, i.1956, 1 ♂, 3 ♀ (*R. Paulian*).

Madagascar Sud : Tranoroa, 2 ♀ (*R. Paulian*).

***Caprorhinus squamipennis* Bruner, 1910**
(Text-fig. 14)

♂ Type. (Redescription.) Small. Integument finely rugose. Antenna 18-segmented, much longer than head and pronotum together. Fastigium of vertex twice as long as its width in middle, its sides in basal part slightly excurved, in apical part almost parallel, apex parabolic ; upper, compressed part of frontal ridge excurved, at apex angularly merging with fastigium of vertex. Median carina of pronotum hardly traceable ; metazona about one third of length of prozona, its posterior margin slightly incurved, almost straight. Prosternal process with obtuse apex. Protruding part of elytron about twice as long as its width. Tympanal organ vestigial. Last abdominal tergite large, shallowly bilobate. Supra-anal plate small, parabolic, shorter than cerci ; cercus comparatively slender, slightly widened in basal part, in apical part slightly incurved and downcurved ; subgenital plate, in profile, with rounded apex and ridge-like fold, ending in upper part with small tubercle.

General coloration olive-brown ; ochraceous stripe on lower half of lateral lobe of pronotum up to base of hind femur ; similar stripe running along middle of head, pronotum and up to second abdominal tergite ; elytron bright red, with basal external side black, hind knee brownish ; hind tibia olive-green.

♀. Larger than male. Fastigium of vertex relatively shorter. Elytron only slightly protruding under pronotum. Metanotum and first abdominal tergite slightly inflated ; projection on first abdominal tergite with rounded apex. Ovipositor short, robust, valves with acute, curved apices ; external upper margin of upper valve roughly serrated. Subgenital plate slightly trilobate, with angular median and wide, slightly excurved lateral lobes. In other respects as the male.

Length of body ♂ 16.0, ♀ 25.0 ; pronotum ♂ 2.4, ♀ 5.1 ; hind femur ♂ 9.0, ♀ 12.5 mm.

Type locality : Comoro Is., Anjouan Cercle de Bombao, 500 m.

Only the type and one female paratype (both in Berlin Museum) of this species are known. The second female paratype is probably lost.

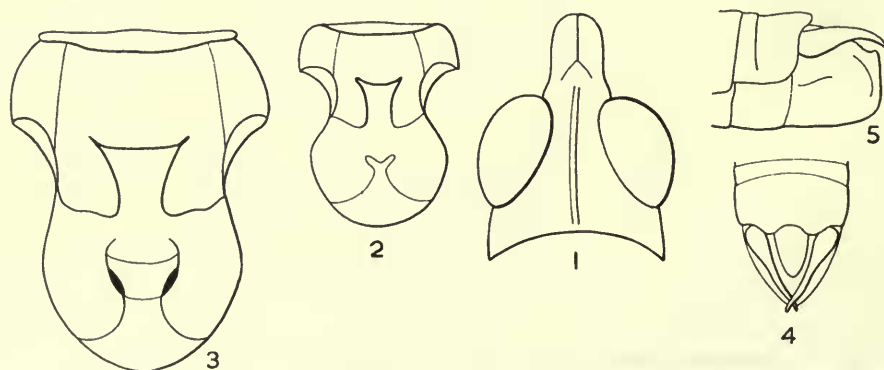


FIG. 14. *Caprorhinus squamipennis* Bruner, 1910. ♂ type. 1, head from above. 2, meso- and metasternum, male. 3, the same, female. 4, end of male abdomen from above. 5, the same, lateral view.

GYMNOHIPPIUS Bruner, 1910

Of submedium size. Integument granulose. Antenna thick filiform, shorter than head and pronotum together. Fastigium of vertex short, wide, angular; fastigial furrow short; upper fastigial areolae poorly developed; head short, conical; frons, in profile, slightly incurved; frontal ridge low, narrow, shallowly sulcate, compressed and roundly protruding between antennae. Pronotum cylindrical, without carinae; dorsum crossed by two deep sulci; metazona about one third of length of prozona, its posterior margin straight; lateral lobe of pronotum longer than its height, its lower margin oblique. Prosternal process short, pyramidal. Mesasternal interspace longer than its width, distant from metasternal one. Elytra, wings and tympanal organ absent. Hind femur of medium width, its basal lobes about equal length; lower lobes of hind knee obtusangular; external apical spine of hind tibia present. Arolium large. Last abdominal tergite of male long, with a pair of rounded projections. Male supra-

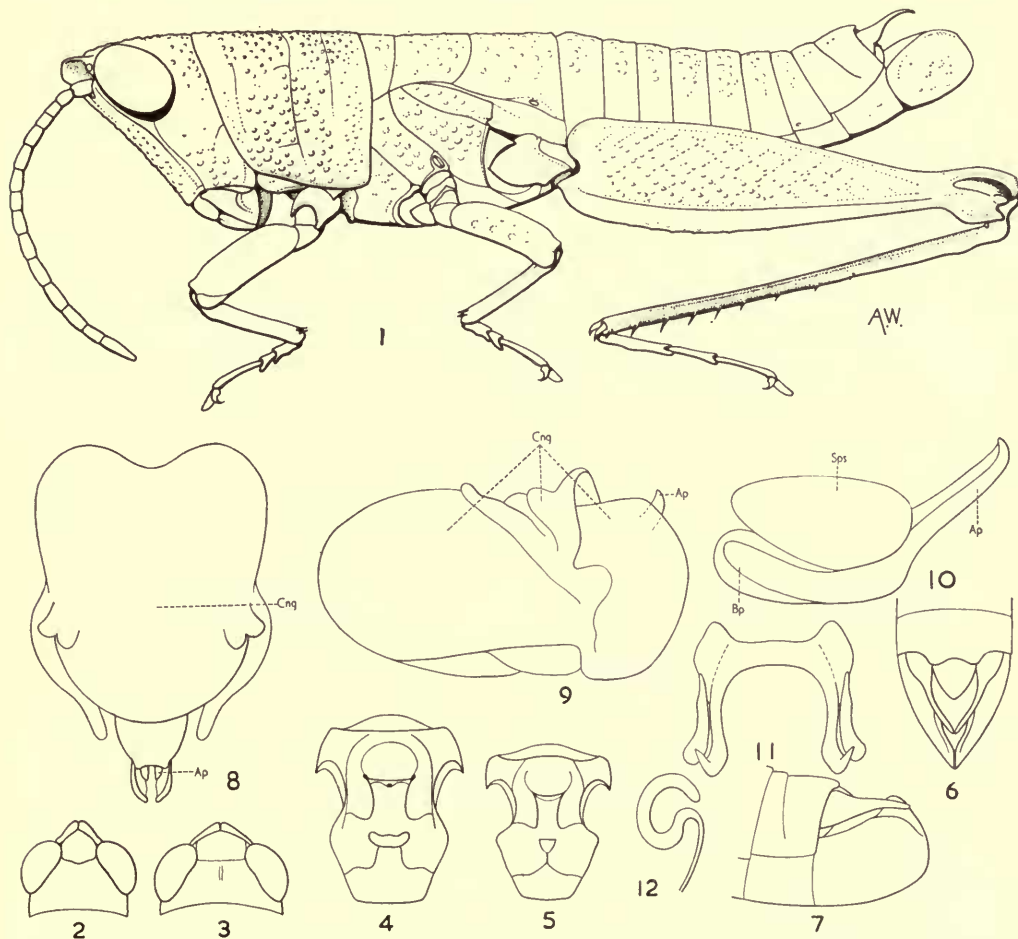


FIG. 15. *Gymnohippus marmoratus* Bruner, 1910. 1, male. 2, head of male from above. 3, the same, female. 4, meso- and metasternum, female. 5, the same, male. 6, end of male abdomen from above. 7, the same, lateral view. 8, phallic complex from above, epiphallus and ectophallic membrane removed. 9, the same, lateral view. 10, penis and spermatophore sac. 11, epiphallus. 12, spermatheca.

anal plate angular, about half as long as cerci ; cercus elongated, at basal part widened, in apical half strongly narrowed, slightly incurved and downcurved ; subgenital plate compressed, in profile, with rounded apex. Ovipositor short, robust, with valves curved at apices.

Phallic complex : cingulum wide, with lateral bulges ; valves of cingulum absent ; penis short ; basal valve moderately widened ; apical valve upcurved, with subacute apex ; spermatophore sac very large. Epiphallus with short bridge ; ancorae absent ; lophi elongated, slender, with large hooks.

Spermatheca narrow, S-shaped, with single diverticulum.

Type species : *Gymnohippus marmoratus* Bruner, 1910.

Gymnohippus marmoratus Bruner, 1910 (Text-fig. 15)

Gymnohippus marmoratus Bruner, 1910 : 637.

Gymnohippus conspersipes Bruner, 1910 : 637 ; Kevan, 1962, in litt.

Gymnohippus granulosus Bruner, 1910 : 637 ; Kevan, 1962, in litt.

♂. Antenna 15-segmented. Fastigium of vertex about twice as wide as its length, convex and granulose. Pronotum strongly granulose. Mesosternal interspace about half again as long as its width, with slightly incurved sides ; metasternal interspace inverse triangular. General coloration sandy-ochraceous, sometimes greenish, sometimes with marmorate darkish pattern ; mandible reddish ; mesonotum sometimes with reddish transverse stripe ; hind tibia in lower half carmine-red, sometimes blackish.

♀. Larger than male. Antenna 14 or 15-segmented. Fastigium of vertex about three times as wide as its length. Mesosternal interspace longer than its width, but relatively wider than in male ; metasternal interspace transverse. Coloration as in the male, but hind tibia ochraceous or slightly greenish. Otherwise as the male.

Length of body ♂ 14.5-19.0, ♀ 22.0-27.0 ; pronotum ♂ 3.2-3.7, ♀ 4.5-5.2 ; hind femur ♂ 9.0-9.5, ♀ 10.0-11.7 mm.

Madagascar Sud-Ouest : Lac Tsimanampetsotsa, v.1951, 1 ♀ (*R. Paulian*) ; Efoetsy, v.1951, 1 ♂, 1 ♀ (*A. Robinson*) ; Anakao (Haut), dct. de Tuléar, 2.iv.1953, 1 ♂, 1 ♀ (*A. Robinson*) ; Itampolo, 13.v.1951, 2 ♀ (*R. Paulian*).

This species varies in body size ; in sculpture of integument, which is sometimes more, sometimes less granulose, and in coloration as mentioned above.

PARASPHENA I. Bolivar, 1884

Small to medium size. Body approximately cylindrical. Integument rugose. Antenna rod-like, thick, shorter than head and pronotum together. Fastigium of vertex with parabolic apex, convex surface and large apical fastigial areolae ; head acutely conical ; frons strongly oblique and incurved ; frontal ridge low, narrow, with deep sulcus and obtuse lateral carinulae. Pronotum cylindrical or subcylindrical, slightly widening backwards ; median carina obtuse, crossed by two sulci ; weak lateral carinae present or absent ; metazona about one third or one fourth of length of prozona, its posterior margin incurved. Prosternal process conical, with wide base and acute, slightly attenuate apex ; in female sometimes transverse, low, with slightly protruding subacute apex. Mesosternal interspace distant from metasternal. Elytra, wings and tympanum absent. Hind femur narrow. Hind tibia not expanded or scarcely expanded ; external apical spine present. Arolium large. Male supra-anal plate angular. Cercus conical. Subgenital plate with almost rounded apex. Ovipositor moderately long, with valves curved at apices.

Type species : *Sphenarium pulchripes* Gerstaecker, 1869.

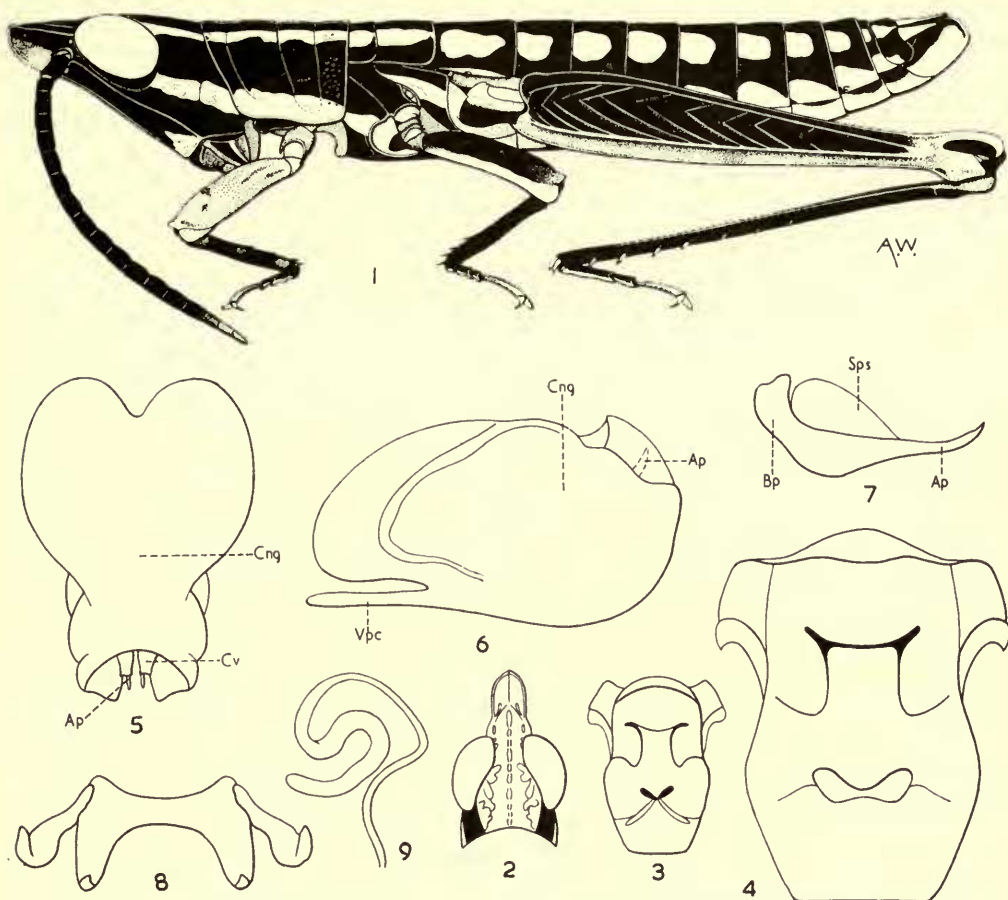


FIG. 16. *Parasphena dispar* sp. n. ♂ type. 1, male. 2, head from above, male. 3, meso- and metasternum, male. 4, the same, female. 5, phallic complex from above, epiphallus and ectophallic membrane removed. 6, the same, lateral view. 7, penis and spermatophore sac. 8, epiphallus. 9, spermatheca.

***Parasphena dispar* sp. n.**
(Text-fig. 16)

♂ Type. Small. Body cylindrical. Integument rugose and tuberculate. Antenna 17-segmented. Head narrow, acutely conical; fastigium of vertex elongate, at base widened; carinula of vertex strong; two lateral rows of callosities along head above; postocular row of tubercles low. Median carina of pronotum low, thick; lateral carina absent; metazona about one fourth length of prozona, its posterior margin slightly angularly incurved. Mesosternal interspace longer than its width; metasternal interspace with large foveolae. Lower lobes of hind knee angular. Last abdominal tergite of male with deep, rounded incision. Supra-anal plate narrow, acutangular; cercus simple, obtusely conical with slightly incurved apex; subgenital plate compressed, slightly elongated, with rounded apex.

Phallic complex : cingulum pear-shaped ; valves of cingulum short, with obtuse apices ; penis moderately slender ; basal valve slightly widened and upcurved ; apical valve slender with acute apex ; spermatophore sac large. Epiphallus with short bridge ; lophi short and wide, with small hooks ; dorso-lateral appendices slightly shorter than lophi, widened at apices, with upcurved apical hooks.

General coloration brown, with yellow pattern ; frons near clypeus with a pair of yellow spots ; mandibles dark red ; along whole dorsal side of body, from eyes to supra-anal plate, there are a pair of yellow stripes, on abdomen disintegrated into spots ; postocular row of tubercles, lower part of lateral lobe of pronotum and pleura yellow ; anterior and middle legs reddish ; hind femur on external side brownish-red, all other sides dull red ; crescents of hind knee brown on both sides ; hind tibia dark brown, with whitish spines.

♀. Paratype. Much larger than male. Body slightly fusiform. Integument tuberculate, shiny. Antenna 17-segmented. Head moderately narrow, acutely conical ; fastigium of vertex less elongated and relatively wider than in male. Median carina of pronotum almost obliterated ; lateral carinae absent. Prosternal process as in male. Lower valve of ovipositor with small, lateral, rounded projection. Posterior margin of subgenital plate straight, with narrow, angular projection in middle.

Spermatheca with slender, S-curved single diverticulum.

General coloration olive-green with yellowish and reddish pattern ; head olive-greenish with yellowish tubercles ; fastigium of vertex and basal part of antenna reddish ; mandibles reddish ; pronotum olive-green, with tubercles yellowish and reddish stripe along middle and along posterior margin ; abdomen yellowish, stripe along dorsal part and posterior margins of tergites brownish red ; external side of hind femur olive-green, other sides dull reddish ; hind tibia ochraceous ; end of ovipositor reddish.

Length of body ♂ 17.0, ♀ 28.0-41.0 ; pronotum ♂ 2.8, ♀ 5.0-6.0 ; hind femur ♀ 8.0, ♀ 13.0-15.3 mm.

Madagascar Centre : Forêt Vakoana, Ambalamarovandana 1,530 m., Andringitra, Ambalavao, 21.i.1958, 1 ♀ (*P. Griveaud*) ; Plateau Soaindrana, 2,090 m., Andringitra, Ambalavao, 15-16.i.1958, 20 ♀ (*R. Paulian*) ; Cirque Boby 2,500 m., Andringitra, Ambalavao, 12-13.i.1958, 3 ♂ (including type), 17 ♀ (*R. Paulian*). Pic d'Ivohibe, 2,200 m., 8.xi.1950, 1 ♀ (*J. Millot*). Type in the Paris Museum.

This new species is placed in the genus *Parasphena* on the basis of the phallic complex. When compared with the phallic complex of *Parasphena pulchripes*, the type species, it appeared identical in all essential features. The characters which are not typical of *Parasphena*, like more pronounced sexual dimorphism, more slender body of male, more elongated fastigium of vertex, may not significantly upset the diagnosis of the genus. However, the whole genus and the group of genera near *Parasphena* badly need revision to clarify interrelations between the genera and species of the group.

DYSCOLORHINUS Saussure, 1899

Of medium size. Body elongated, slender, narrow cylindrical. Integument rugose and tuberculate, shiny. Antenna slightly widened in basal part and tapering towards apex, about as long as head and pronotum together. Fastigium of vertex longer than its width, with apex parabolic ; upper fastigial areolae poorly developed ; fastigial furrow moderately long ; head narrow, acutely conical ; frontal ridge low, narrow, sulcate, slightly raised and widened between antennae, angularly merging with fastigium of vertex ; postocular row of tubercles present. Pronotum cylindrical ; median carina hardly traceable ; lateral carinae represented by a row of low tubercles ; one or two weak sulci crossing dorsum ; metazona much shorter than prozona,

its posterior margin slightly incurved, almost straight. Prosternal process low pyramidal. Mesosternal interspace longer than its width in middle, with strongly incurved sides, distant from metasternal interspace. Elytra, wings and tympanal organ absent. Hind femur slender; lower lobes of hind knee acutangular; hind tibia slightly widening towards apex; external apical spine of hind tibia present. Arolium large. Last abdominal tergite of male with deep, rounded incision. Supra-anal plate short, angular; cercus short, obtusely conical; sub-

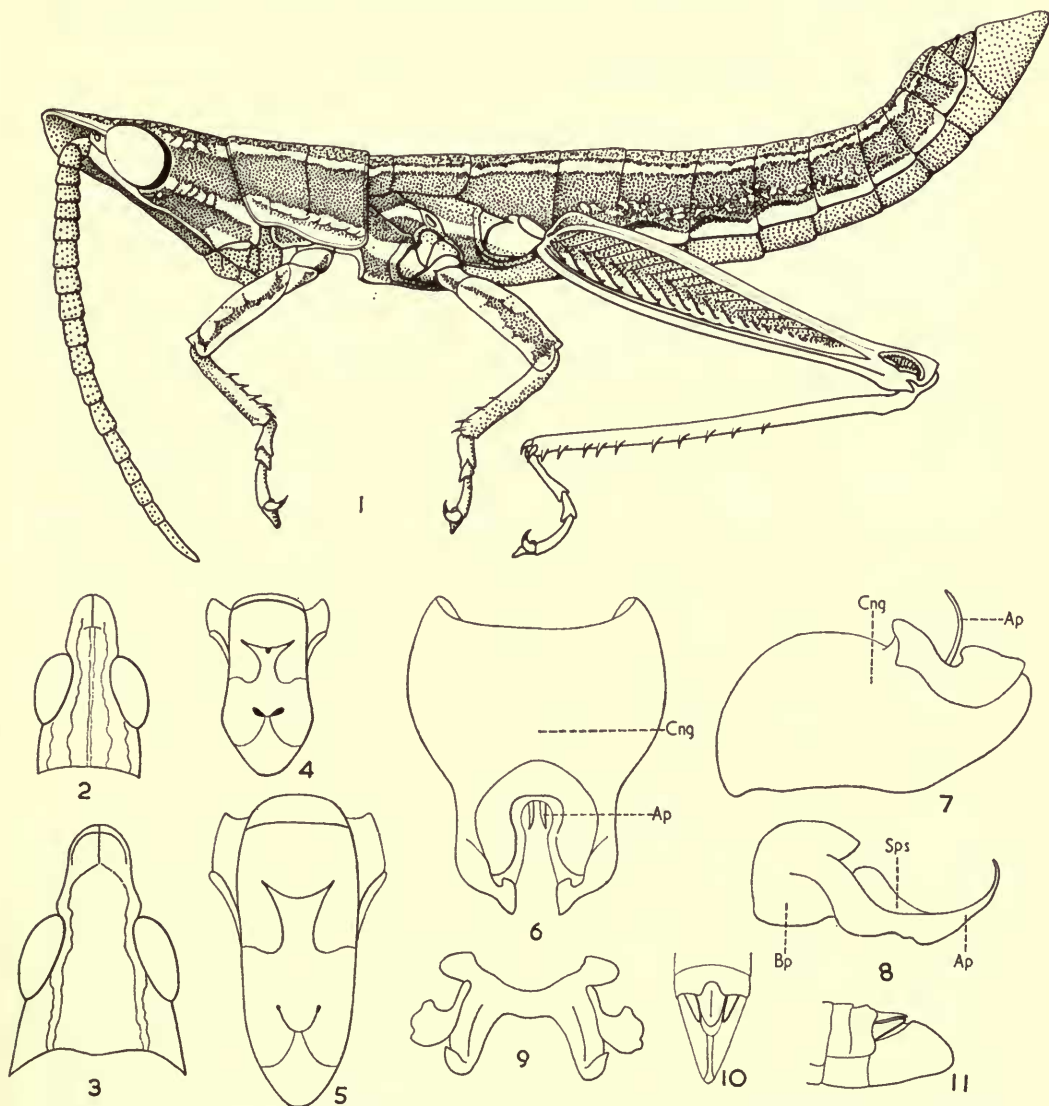


FIG. 17. *Dyscolorhinus squalinus* Saussure, 1899. 1, male. 2, head from above, male. 3, the same, female. 4, meso- and metasternum, male. 5, the same, female. 6, phallic complex from above, epiphallus and ectophallic membrane removed. 7, the same, lateral view. 8, penis and spermatophore sac. 9, epiphallus. 10, end of male abdomen, from above. 11, the same, lateral view.

genital plate elongate conical. Ovipositor short, moderately robust, with valves curved at apices ; posterior margin of subgenital plate with lateral parts roundly excurved, median part incurved, with narrow angular projection.

Phallic complex : cingulum comparatively large ; valves of cingulum absent ; penis strongly curved ; basal valve strongly widened ; apical valve strongly narrowed and upcurved, with acute apex ; spermatophore sac relatively small. Ephiphallus with short bridge with pair large lateral projections ; lophi wide, with strong, large hooks ; dorso-lateral appendices strongly widened at apices.

Type species : *Dyscolorhinus squalinus* Saussure, 1899.

Dyscolorhinus squalinus Saussure, 1899

(Text-fig. 17)

♂. Antenna 18-segmented. Carinula of vertex present ; head above with two rows of lateral callosities ; facial carinulae strong, wide. Lateral lobe of pronotum much longer than its height, its lower margin slightly oblique and sinuate. General coloration olive-brown or brown, with orange-yellow pattern ; carinae, tubercles and callosities on head orange-yellow ; lateral carinae and lower margin of lateral lobe of pronotum orange-yellow ; side of abdomen with a pair of orange-yellow longitudinal stripes ; medial external area of hind femur in upper part blackish, in lower part yellow ; upper external area orange ; lower external area and lower and internal side orange-red ; internal side of hind knee brown ; hind tibia blackish-brown.

♀. Much larger than the male. Antenna 18-segmented. Fastigium of vertex relatively wider than in male ; carinula of vertex absent. Coloration as in male, but duller, with less developed orange-yellow pattern.

Length of body ♂ 16.0-17.5, ♀ 26.6-38.0 ; pronotum ♂ 2.3-2.5, ♀ 4.0-4.5 ; hind femur ♂ 7.0-8.2, ♀ 11.0-12.5 mm.

The female lectotype, designated by Dirsh 1961, preserved in Geneva Museum. Type locality : " Madagascar ".

Madagascar Centre : Tananarive, ix.1954, 1 ♀ (*R. Paulian*) ; Station de Pisciculture, Manjakatempo, 23.xii.1947, 1 ♀ (*P. Cachan*) ; Km. 30 Rte. d'Ambatolampy, Face Est d'Iharanandriana, 18.xii.1953, 2 ♂ (*A. Robinson*).

AMBOSITRACRIS gen. n.

Of submedium size. Body strongly elongated, slender, narrow, cylindrical. Integument rugose and shiny. Antenna about as long as head and pronotum together, slightly thickened in basal part ; apical segment slightly bilobate at apex. Fastigium of vertex longer than its width, parabolic ; fastigial furrow moderately long ; upper fastigial areolae well developed ; head narrow, acutely conical ; frons strongly oblique and slightly incurved ; frontal ridge low, sulcate, angularly merging with fastigium of vertex ; carinula of vertex present ; postocular row of tubercles present. Pronotum cylindrical ; median carina hardly discernible ; lateral carinae absent ; two weak sulci crossing dorsum ; metazona about one fourth to one fifth of length of prozona, its posterior margin slightly incurved, almost straight. Prosternal process low pyramidal, forming part of collar. Mesosternal interspace longer than its width in middle part, distant from metasternal one. Elytra, wings and tympanal organ absent. Hind femur slender, not reaching end of abdomen ; lower lobes of hind knee acutangular ; hind tibia slightly widening towards apex ; external apical spine present. Arolium large. Last abdominal tergite of male with deep, rounded incision. Supra-anal plate very small, narrow angular ; cercus subconical, slightly incurved, with obtuse apex ; subgenital plate with trilobate apex, formed by lateral and median carinulae, lateral carinulae forming projections on sides of plate.

Ovipositor moderately short, with valves curved at apices ; subgenital plate of female weakly trilobate, with wide, short lateral and narrow angular median lobes.

Phallic complex : cingulum constricted in middle ; valves of cingulum present ; ventral posterior process of cingulum very long ; basal valve of penis moderately widened ; apical valve of penis narrow, with acute apex. Epiphallus with moderately long bridge ; lophi wide, with large hooks ; dorso-lateral appendices widening towards apices.

Spermatheca narrow, with two diverticula, preapical one being very small.

Type species : *Ambositracris ornatus* sp. n.

This new genus in body shape, pattern and coloration is superficially very similar

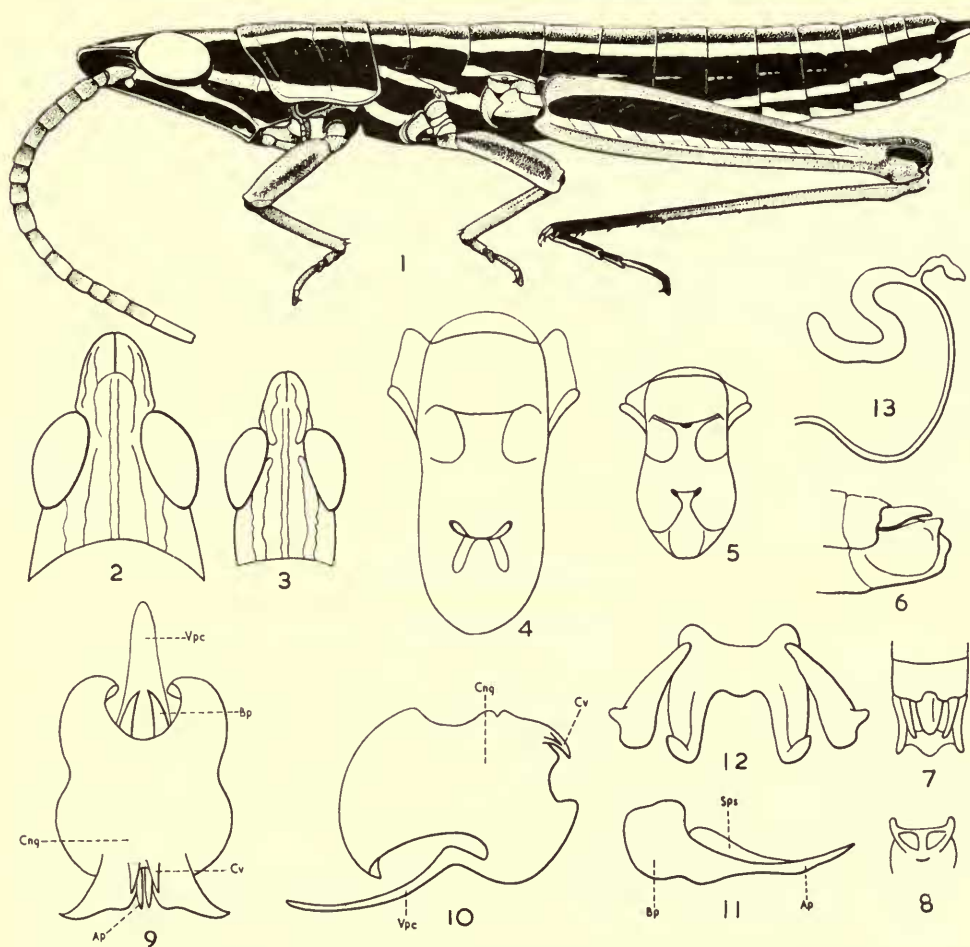


FIG. 18. *Ambositracris ornatus* sp. n. ♂ type. 1, male. 2, head from above, female. 3, the same, male. 4, meso- and metasternum, female. 5, the same, male. 6, end of male abdomen, lateral view. 7, the same, from above. 8, male subgenital plate, posterior view. 9, phallic complex from above, epiphallus and ectophallic membrane removed. 10, the same, lateral view. 11, penis and spermatophore sac. 12, epiphallus. 13, spermatheca.

to *Dyscolorhinus* Saussure. However, the structure of the subgenital plate of the male is quite different, that of *Dyscolorhinus* being plain conical, while that of *Ambositracris* has a complicated structural arrangement at the apex and sides. The phallic complex in each is very different (Text-figs. 17, 18), so much so that it is impossible even to consider them closely related at all.

The systematic position of the new genus therefore is rather obscure, and for the time being it cannot be attached to any group of genera in the family.

***Ambositracris ornatus* sp. n.**

(Text-fig. 18)

♂ Type. Small. Antenna 17-segmented. Fastigium of vertex and head above with pair of lateral, longitudinal callosities. Lateral lobe of pronotum much longer than its height, its lower margin slightly oblique and sinuate. Mesosternal interspace with apex strongly widened; mesosternal lobes rounded. General coloration brown, with yellow pattern; lateral carinulae of fastigium of vertex and head, facial carinae and postocular row of tubercles yellow; dorsum of pronotum with a pair of yellow, lateral stripes; lateral lobe of pronotum with wide yellow stripe along lower margin; pleura with yellow stripes; side of abdomen with a pair of longitudinal stripes and yellow streaks between them; external medial area of hind femur yellow, with blackish longitudinal stripe; upper and lower external areas and internal side of the femur orange-red; internal side of hind knee brown; hind tibia blackish-brown.

♀. As the male, but much larger. Antenna 17 or 18-segmented. Lower valve of ovipositor with small, angular, lateral projection. General coloration and pattern as in the male, but duller.

Length of body ♂ 15.3, ♀ 20.6–23.0; pronotum ♂ 2.3, ♀ 3.2; hind femur ♂ 6.8, ♀ 9.0 mm.

Madagascar Centre: Ankazomivady, 1,640 m., Ambositra, vii.1957, 1 ♂, (type), 5 ♀ (*A. Robinson*); Ankaratra, Col. de Faratsiho, 1 ♀ (*R. Paulian*); Ambohiby, 1,600 m., Tsiroanomandidy, 26.v.1948, 1 ♀ (*R. Paulian*). Type in the Paris Museum.

***SAGITTACRIS* gen. n.**

Of medium size. Body slender, elongated. Integument finely rugose. Antenna filiform, longer than head and pronotum together. Head elongated, acutely conical; fastigium of vertex elongated, narrow angular; fastigial furrow moderately long; fastigial areolae poorly developed; frons, in profile, slightly sinuate, frontal ridge very low, between and in front of antennae lamelliformly compressed, sulcate on whole length, angularly merging with frontal ridge and slightly excised at apex. Pronotum cylindrical, with traces of median and without lateral carinae; three weak sulci crossing dorsum; metazona about one fifth of length of prozona, its posterior margin straight. Prosternal process conical, with obtuse apex. Mesosternal interspace open; metasternal interspace distant from mesosternal. Elytra, wings and tympanal organ absent. Hind femur slender, not exceeding end of abdomen. External apical spine of hind tibia present. Tarsus elongated, half as long as tibia. Arolium large. Male supra-anal plate simple, narrow angular; cercus simple, conical; subgenital plate short, subconical.

Phallic complex: cingulum pear-shaped; valve of cingulum short; basal valve of penis strongly upcurved and widened; apical valve straight, with acute apex; spermatophore sac small. Epiphallus with short bridge; lophi robust, with strong hooks.

Type species: *Sagittacris malagassus* sp. n.

The new genus differs strongly from all known genera of *Pyrgomorphidae*. It is just possible that *Sagittacris* is remotely related to *Parorthacris* Dirsh, 1957.

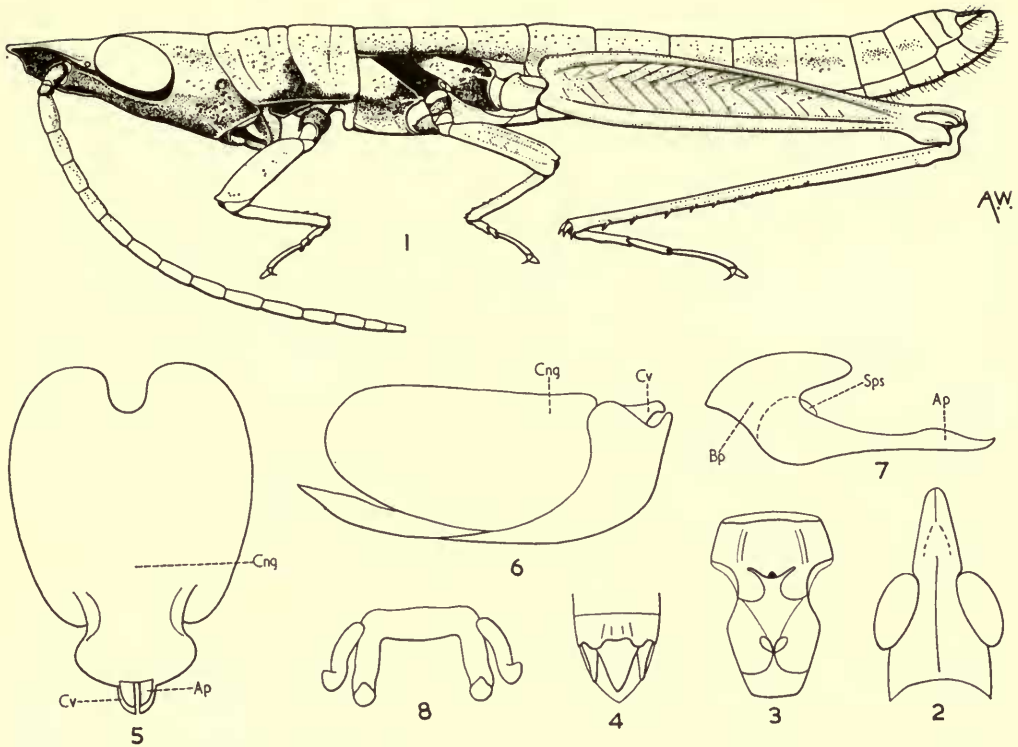


FIG. 19. *Sagittacris malagassus* sp. n. ♂ type. 1, male. 2, head from above. 3, meso- and metasternum. 4, end of abdomen from above. 5, phallic complex from above, epiphallus and ectophallic membrane removed. 6, the same, lateral view. 7, penis and spermatophore sac. 8, epiphallus.

***Sagittacris malagassus* sp. n.**

(Text-fig. 19)

♂ Type. Antenna 16-segmented; apical segment at apex slightly excised. Head above with weak median carinula. Lateral lobe of pronotum much longer than its height, its lower margin almost straight, anterior angle widely rounded, posterior angle with small incision. Mesosternal interspace with widened anterior part and deep foveola; mesosternal lobes short, rounded; metasternal interspace substituted by two leaf-like depressions. Lower lobes of hind knee narrow, attenuate, with obtuse apices. Posterior margin of last abdominal tergite of male with shallowly excised apex and two small, widely separated, rounded projections.

General coloration brownish, ochraceous below; two ochraceous spots on pleura; hind tibia and tarsus bright red.

Only a single male type is known.

Length of body 24.0; pronotum 3.6; hind femur 10.2 mm.

Madagascar: Manambato, 1 ♂, type (*Anove*).

Type in Paris Museum.

PYRGOHIPPIUS gen. n.

Small. Male body cylindrical, female slightly fusiform. Integument granulose. Antenna thick, almost filiform, thickened in basal part, much shorter than head and pronotum together. Fastigium of vertex moderately short, with apex parabolic; fastigial furrow short; upper fastigial areolae poorly developed; head acutely conical, frons incurved; frontal ridge low, sulcate, compressed and protruding between antennae, at frontal part of apex excised and angularly merging with fastigium of vertex. Pronotum cylindrical, slightly widening backwards; median and lateral carinae absent; two sulci crossing dorsum; metazona about one third length of prozona, its posterior margin straight. Prosternal process in male low pyramidal, in female transverse, tubercle-like. Mesosternal interspace longer than its width, distant from metasternal one. Elytra, wings and tympanal organ absent. Hind femur comparatively short, its basal lobes of equal length; external apical spine of hind tibia present. Arolium large. Last abdominal tergite of male large, with a pair of large angular projections. Supra-anal plate short, angular; cercus compressed, short, angular, with acute apex; subgenital plate slightly compressed, elongate conical. Ovipositor short, moderately robust, with almost straight valves. Subgenital plate with angular median projection.

Phallic complex: cingulum wide, with large strong dorsal sclerotization; valves of cingulum absent; valves of penis irregularly curved; basal valve slightly widened; apical valve human-leg-shaped. Epiphallus with wide bridge; small, angular ancorae present; lophi short, with acute hooks; dorso-lateral appendices with club-like apices.

Spermatheca irregularly curved, vermicular, with single diverticulum.

Type species: *Pyrgohippus pallidus* sp. n.

This new genus externally resembles *Gymnohippus* Bruner (p. 75), but differs from it by the frontal ridge which is excised at its apex and by the shape of the whole head which is much more acute and narrow; also by the structure of the male cerci, the last abdominal tergite and particularly by the structure of the phallic complex, which is strikingly different. It cannot be placed with certainty into any group of known genera or in the vicinity of any known genus.

***Pyrgohippus pallidus* sp. n.**

(Text-fig. 20)

♂ Type. Body cylindrical. Antenna 14-segmented. Head strongly granulose; fastigium of vertex longer than its width, parabolic; short carinula of vertex present; carinulae of frontal ridge low, obtuse. Lateral lobe of pronotum longer than its height, lower margin slightly oblique. Mesosternal interspace about twice as long as its width in middle, with incurved sides; metasternal interspace reduced to a vertical slit, with foveolae above. Lower lobes of hind knee obtusely angular. General coloration pale ochraceous, without any pattern; hind tibia greenish.

♀. Larger than the male. Body slightly compressed and slightly fusiform. Antenna 10 or 11-segmented. Head strongly granulose; fastigium of vertex shorter than its width, widely parabolic; carinula of vertex absent. Pronotum slightly compressed. Mesosternal interspace slightly longer than its width, with slightly incurved sides; metasternal interspace transverse. Lower valve of ovipositor with angular lateral projection. In other respects as the male.

Length of body ♂ 15.5-19.6, ♀ 22.0-26.0; pronotum ♂ 2.8-3.5, ♀ 5.2-5.4; hind femur ♂ 8.0-9.0, ♀ 10.0-10.2 mm.

Madagascar Sud-Ouest: Lac Tsimanampetsotsa, v.1951, 1 ♀ (R. Paulian);

Efoetsy, v.1951, 1 ♂, 1 ♀ (*A. Robinson*) ; Anakao (Haut), Dct. de Tuléar, 2.iv.1953, 1 ♂, 1 ♀ ; Itampolo, 13.v.1951, 1 ♂, 1 ♀ (*R. Paulian*).

Type and paratypes in Paris Museum. Two males, one female paratypes in the British Museum (Natural History).

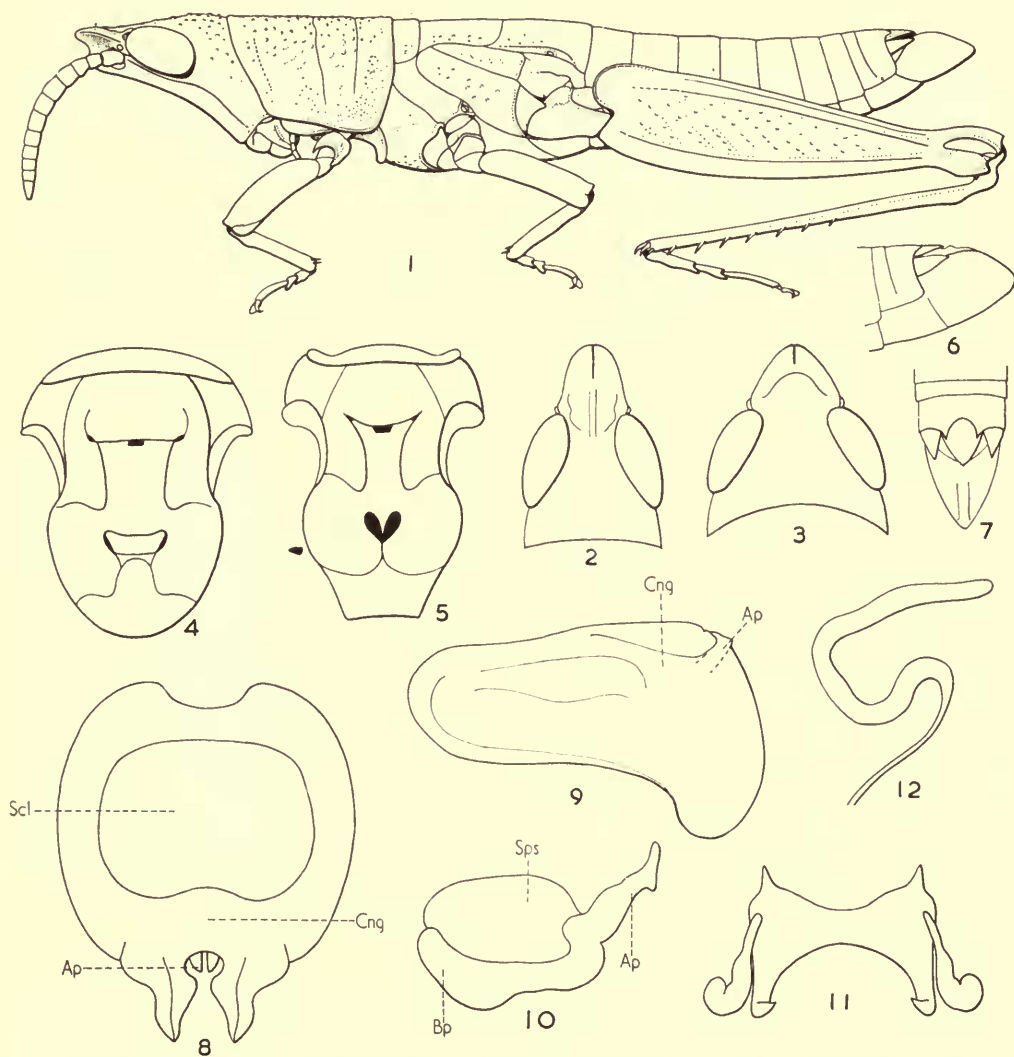


FIG. 20. *Pyrgohippus pallidus* sp. n. ♂ type. 1, male. 2, head from above, male. 3, the same, female. 4, meso- and metasternum, female. 5, the same, male. 6, end of male abdomen, lateral view. 7, the same, from above. 8, phallic complex from above, epiphallus and ectophallic membrane removed. 9, the same, lateral view. 10, penis and spermatophore sac. 11, epiphallus. 12, spermatheca.

GELIUS Group

In 1899 Saussure described the genus *Geloius* with a single species *nasutus*. He placed it into the "Strips *Geloius*" of the tribe *Pyrgomorphii*. He then regarded the family *Pyrgomorphidae* as a tribe.

In 1905 I. Bolivar erected for this genus a new subfamily *Geloiinae*, considering *Pyrgomorphidae* as a family. In his "Genera Insectorum" 1909, however, he reduced *Pyrgomorphidae* to subfamily status and regarded *Geloiinae* as "section *Geloi*".

Since the interrelations of the genera of *Pyrgomorphidae* at present are not sufficiently clear to allow its division into subfamilies, the indefinite term group is used here for *Geloius* and another new genus.

KEY TO GENERA

- 1 (2) Male anterior femur on external side with row of large teeth. End of abdomen not inflated. Cercus simple, conical (Text-fig. 21). **GELIUS** (p. 80)
- 2 (1) Male anterior femur without teeth. End of abdomen strongly inflated. Cercus large, incurved, with wide basal, and strongly widened apical part, forming at lower part of apex an attenuate angular projection and in the upper part a very large, inverse axe-shaped projection (Text-figs. 25, 26) **PSEUDOGELIUS** (p. 92)

GELIUS Saussure, 1899

Body large, elongated, cylindrical. Integument rugose. Antenna shorter than head and pronotum together, triangular in cross section, very wide, slightly tapering towards apex; segments strongly separated; apical segment at apex slightly bilobate. Fastigium of vertex elongated, angular, forming with upper frontal part of head a large process; fastigial areolae poorly developed; frontal ridge between antennae lamelliformly compressed in profile, excised at apex and projecting, below antennae low, shallowly sulcate, with obtuse, low carinulae; frons in profile strongly incurved; compound eyes small, slightly oval, strongly convex; ocelli vestigial. Pronotum cylindrical, only weak linear median carina present; two sulci crossing dorsum; metazona much shorter than prozona, not covering mesonotum. Prosternal process low, pyramidal, with flattened apex. Mesosternal interspace as wide as its length, with incurved sides and elongated lateral foveolae. Metasternal interspace distant from the mesosternal one. Elytra and wings vestigial or absent. Tympanal organ absent. Anterior and middle legs short; external side of male anterior femur with a row of very large teeth, in female with a row of tubercles or strongly rugose. Hind femur moderately narrow. External apical spine of hind tibia present. Arolium large. Supra-anal plate in both sexes simple, elongate angular; cercus in both sexes short, conical, straight or slightly incurved. Male subgenital plate short, subconical, with obtuse apex; in female trilobate or with apical projection. Ovipositor moderately long, with valves curved at apices.

Type species: *Geloius nasutus* Saussure, 1899.

Besides their rather striking general appearance, the species of the genus *Geloius* possess two very distinct external characters. First, the anterior femur of the male has on the external side several large teeth. This character was not included by Saussure in the description of the genus, but he mentioned it in the description of the male of *G. nasutus*. However, he made the reservation that the male may not be conspecific with the female, which he described more fully and before the male. Probably he considered the female as the specific type, but did not designate it

formally according to the present rules. I. Bolivar in his "Genera Insectorum" 1909 included this character in the generic diagnosis. As the males of all species of *Geloius* except *G. finoti* are lost there is no alternative but to consider this character, according to the description, as one of the most important generic characters. The concept of the genus may be altered, however, if this character is not found in all species.

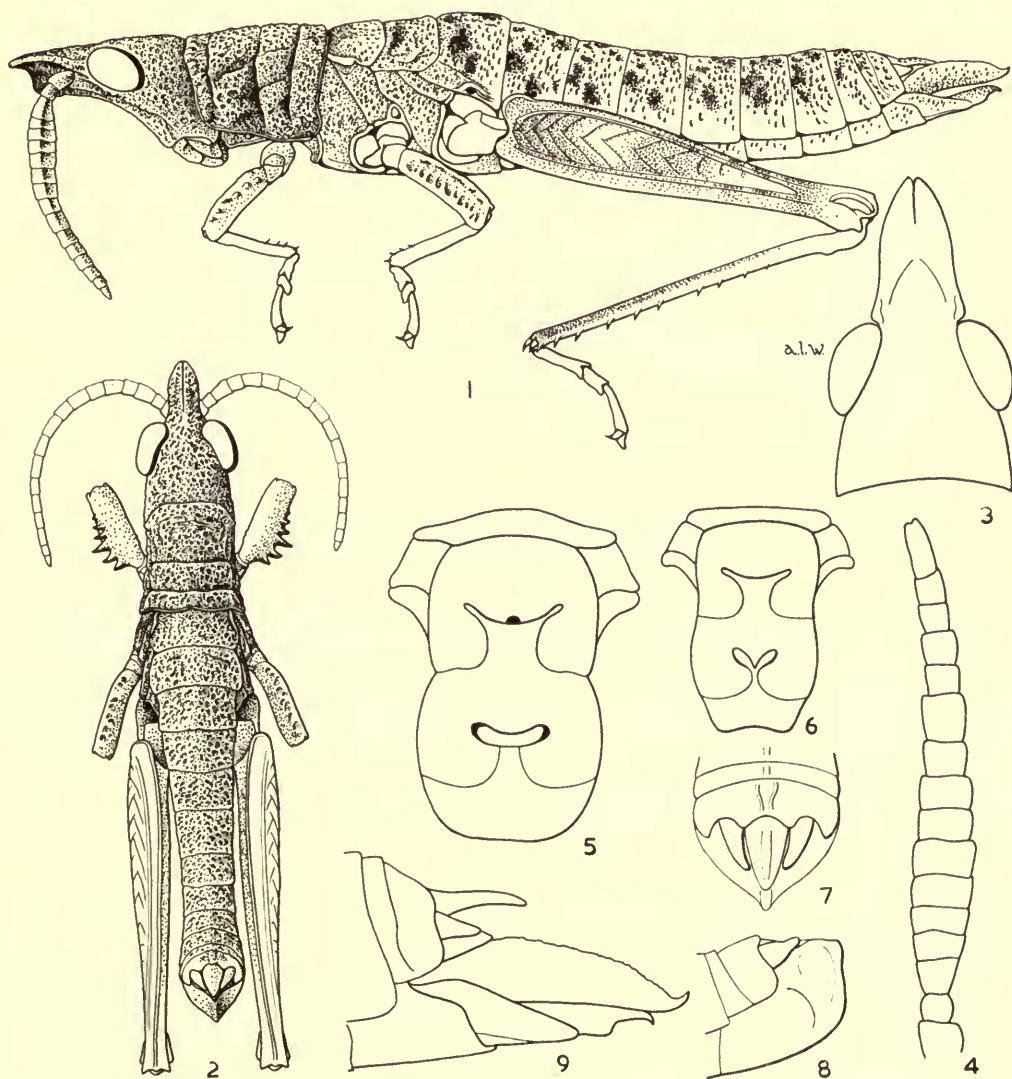


FIG. 21. *Geloius finoti* I. Bolivar, 1905. 1, female. 2, male. 3, head from above, female. 4, male antenna. 5, meso- and metasternum, female. 6, the same, male. 7, end of abdomen from above, male. 8, the same, lateral view. 9, end of abdomen, female.

The second important character is the male cercus, which, according to the description, is simple, narrow and conical in all species.

Both these characters need to be emphasized in connection with the new genus of the group described below.

Since only the male of *G. finoti* is known to me, the key below is given for females only. As the type of *G. decorsei* is lost and the species is not known to me, the key is based on I. Bolivar's (1905) key and description.

KEY TO SPECIES

Females

- | | | | |
|---|-----|---|--------------------------------|
| 1 | (2) | Head without or with scarcely noticeable carinula of vertex (Text-fig. 21) | <i>finoti</i> I. Bolivar |
| 2 | (1) | Head with well developed carinula of vertex. | |
| 3 | (6) | Vestigial elytra present. | |
| 4 | (5) | Fastigium of vertex above elongated angular, with slightly expanded sides at basal part. Upper valve of ovipositor comparatively wide, in profile with convex, roughly serrated upper margin. Subgenital plate with apical process (Text-fig. 23) | <i>nasutus</i> Saussure |
| 5 | (4) | Fastigium of vertex elongated, strongly narrowed at apical, and comparatively strongly expanded at basal part. Upper valve of ovipositor narrow, in profile with straight, not serrated upper margin. Apex of subgenital plate trilobate (Text-fig. 24) | <i>crassicornis</i> I. Bolivar |
| 6 | (3) | Elytra and wings completely absent | <i>decorsei</i> I. Bolivar |

Geloius finoti I. Bolivar, 1905 (Text-figs. 21, 22)

♂. Of medium size. Integument rugose. Antenna moderately widened, 16-segmented. Fastigium of vertex elongated, narrow angular, its lateral margins at base excurved; carinula of vertex absent; frontal ridge strongly protruding between antennae; frontal process of head long, at apex with moderately deep incision. Ocelli rudimentary. Pronotum tuberculate and rugose; posterior margin straight, with small, shallow incision in middle. Metasternal interspace X-shaped, with deep foveolae. Elytron elongated, narrow, scale-like. Abdomen moderately rugose. External side of hind femur with five large teeth. Hind femur moderately narrow, its external medial area with indistinct rhomboidal pattern; lower lobe of hind knee angularly protruding. Supra-anal plate elongate, narrow angular with shallow longitudinal sulcus in middle; cercus short, conical, slightly incurved, with obtuse apex; subgenital plate short, subconical.

Phallic complex: Cingulum pear-shaped; valve of cingulum large, slightly downcurved; basal valve of penis large, expanded and excurved; apical valve of penis narrow, at apex acute. Epiphallus with long arcuate bridge; lophi widely separated, with strong hooks; dorsal lateral appendices long, curved, with club-like, trilobate apices.

General coloration ochraceous, with numerous brownish spots, not forming definite pattern; pronotum with reddish-brown spots; lateral lobe in lower part with wide longitudinal stripe; external side of hind femur ochraceous, internal side brown; hind tibia brownish.

♀. Differs from the male by larger size. Antenna 16-segmented. Metasternal interspace transverse, with deep lateral foveolae. Supra-anal plate narrow, elongate angular, with transverse suture in middle; cercus short, conical; subgenital plate with acutangular apical projection; valves of ovipositor comparatively slender; upper valve narrow, its upper margin, in profile, excurved and serrated; lower valve with small lateral projection. Spermatheca

with single, spiral curved apical diverticulum. Coloration as the male, but external side of hind femur with transverse ochraceous fascia ; hind knee and base of hind tibia orange-ochraceous.

Length of body ♂ 21.0-25.7, ♀ 38.0-40.0 ; pronotum ♂ 3.5-4.0, ♀ 5.4-6.0 ; hind femur ♂ 10.5-12.0, ♀ 13.5-14.0 mm.

I. Bolivar described *Geloius finoti* from several specimens of both sexes. He did not designate the type. Here the male specimen in the Paris Museum, bearing the label "Madagascar. Sikora", is designated as lectotype.

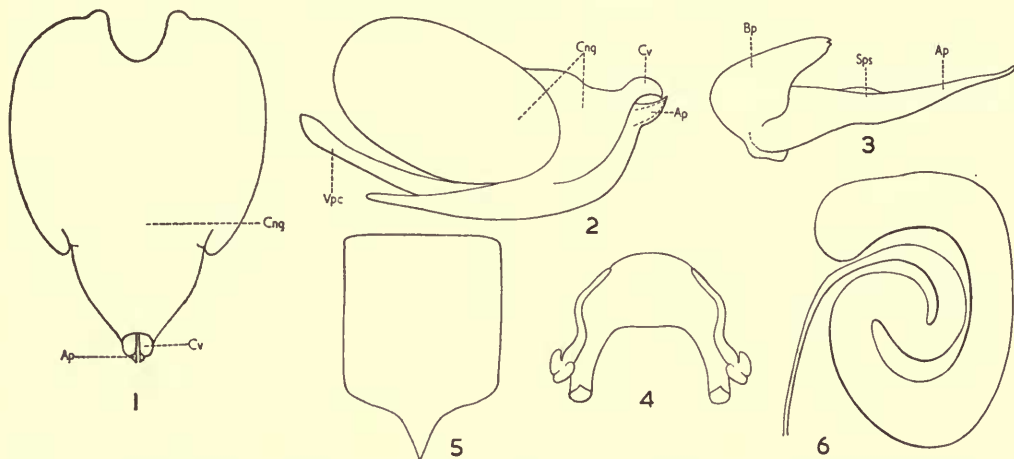


FIG. 22. *Geloius finoti* I. Bolivar, 1905. 1, phallic complex from above, epiphallus and ectophallic membrane removed. 2, the same, lateral view. 3, penis and spermatophore sac. 4, epiphallus. 5, female subgenital plate. 6, spermatheca.

"Madagascar (Sikora)" 1 ♂, 1 ♀.

Madagascar Est : Perinet, 3 ♂, 2 ♀. Dct. Sambava, Marojejy Ouest 1,600 m. xii.1959, 1 ♂ (*Pierre Soga*).

Madagascar Centre : Andranotobaka, 1,400 m., Ambatolampy iv.1957, 1 ♀ (*P. Griveaud*).

Geloius nasutus Saussure, 1899

(Text-fig. 23)

♀. Large. Integument strongly rugose. Antenna strongly widened, 15 or 16-segmented. Fastigium of vertex long, narrow-angular, sides at basal part slightly excurved ; carinula of vertex strong ; frontal ridge strongly protruding between antennae ; frontal process of head long, at apex with deep incision. Ocelli small. Pronotum strongly tuberculate and rugose ; its posterior margin slightly angularly incurved ; lateral lobe in posterior part of lower margin with obtusangular projection. Metasternal interspace X-shaped, with deep foveolae. Elytron elongated, scale-like. Abdomen strongly rugose. Anterior femur rugose. Hind femur moderately narrow ; its external medial area with indistinct rhomboidal pattern ; lower lobe of hind knee protruding, with rounded apex. Supra-anal plate elongate angular, with transverse suture in middle and two longitudinal obtuse carinulae with sulcus between them ; cercus short, wide, conical ; subgenital plate with strong median, apical, angular projection. Valves of ovipositor moderately long, upper valve in profile wide, its upper margin excurved and roughly

serrated; lower valve with obtuse lateral projection. General coloration brown; internal side of hind femur in upper half dark brown; hind tibia brownish; elytron brown, covering small black spot.

♂ (After Saussure). Differs from female by smaller size, by the presence of large teeth on external side of anterior femur and by "styliform" cerci.

Length of body ♂ 23.0, ♀ 44.0-47.0; pronotum ♂ 3.5, ♀ 6.0-6.5; hind femur ♂ 11.0, ♀ 15.0-16.5 mm. (Male measurements according to Saussure.)

When describing the female and male *Geloius nasutus*, Saussure did not designate the type. He described the female first and the male second, and also remarked that the male may not be conspecific with the female. At present only the female specimen remains in Geneva Museum; the male is absent and probably lost. No other male of this species has been recorded since.

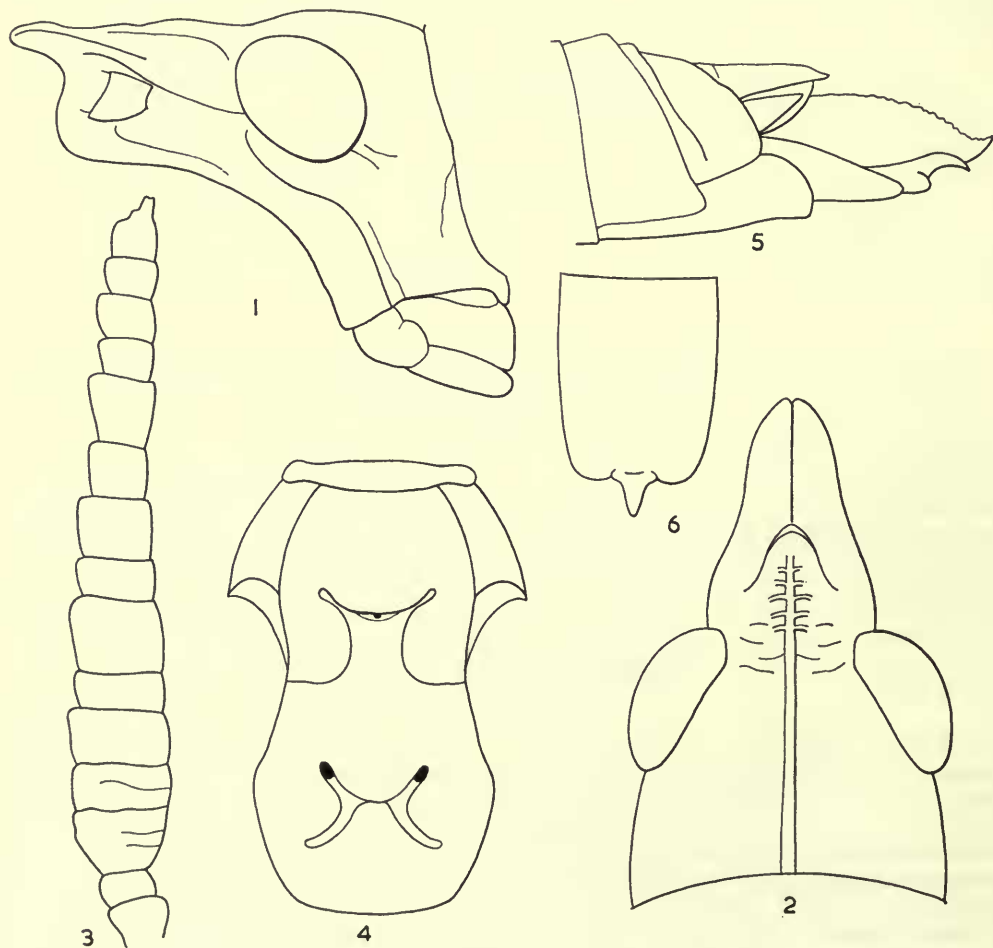


FIG. 23. *Geloius nasutus* Saussure, 1899. Female. 1, head, lateral view. 2, the same, from above. 3, antenna. 4, meso- and metasternum. 5, end of abdomen. 6, sub-genital plate.

Here the female specimen is designated as the lectotype. It is preserved in Geneva Museum and was examined by me. Type locality is "Madagascar".

Madagascar Ouest : Morondava, Forêt Sud de Befasy, i.1950, 1 ♀ (*R. Paulian*).
Station Agric. Bas Mangoky, 1 ♀.

Madagascar Sud : Sept.-Lacs, 100 m. Tuléar, 14.ii.1955, 1 ♀ (*P. Griveaud*).

***Geloius crassicornis* I. Bolivar, 1905**

(Text-fig. 24)

♀ Type. Large. Integument strongly rugose. Antenna strongly widened, 15-segmented. Fastigium of vertex long, narrow, with sides at basal part strongly excurved, carinula of vertex strong; frontal ridge strongly protruding between antennae; frontal process of head long and narrow, its apex with deep incision. Ocelli hardly traceable. Pronotum strongly tuberculate and rugose, its posterior margin truncate; lateral lobes with rounded angles. Metasternal interspace X-shaped, with disconnected foveolae. Elytra elongate, scale-like. Abdomen rugose. Anterior femur strongly rugose. Hind femur moderately narrow; external medial area with feather-like pattern; lower lobe of hind knee protruding, with rounded apex. Supra-anal plate elongate angular with transverse suture in middle; cercus short, conical; subgenital plate trilobate, with short, widely rounded lateral lobes and short, angular middle lobe. Valves of ovipositor moderately long; upper valve, in profile, narrow, its upper margin straight and not serrated; lower valve with small lateral projection. General coloration of all parts of the body brownish.

Male unknown.

Length of body 35.0; pronotum 5.0; hind femur 12.3 mm. (The measurements were checked on the type.)

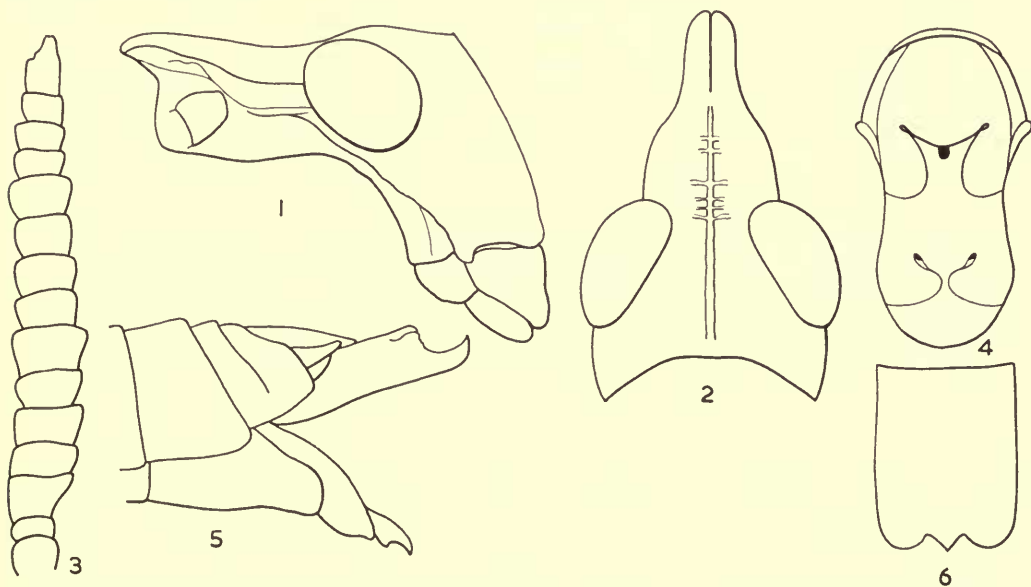


FIG. 24. *Geloius crassicornis* I. Bolivar, 1905. ♀ type. 1, head, lateral view. 2, the same, from above. 3, antenna. 4, meso- and metasternum. 5, end of abdomen. 6, subgenital plate.

Only the type of this species is known and was studied by me. The specimen is shrunk, having been pinned after preservation in spirit, but is otherwise intact.

This species is very near to *Geloius nasutus* Saussure, but differs in the structure of the ovipositor and subgenital plate (Text-figs. 23, 24).

The type specimen, a female, is in the Paris Museum, with locality label "Madagascar, Grandidier".

Geloius decorsei I. Bolivar, 1905

This species was described from a male and a female from "Ambovombe, Madagascar (Dr. Decorse) 1901". Although according to the original description both specimens were deposited in the Paris Museum, they could not be found either there or in any other European Museum with which I. Bolivar had had connection. Most probably they are lost.

As this species is known now only by the description, I. Bolivar's diagnosis is cited below :

"Terrens ochraceus, rugosus. Capite supra inter oculos rugis auriculatis retrorsum in carinas productis ; fastigium medio subcoarctatum antice rotundatum a latere visum oculo vis longius ; ocelli perspicui minuti ; frons arcuato-sinuata. Pronotum rugulosum impresso-punctatum punctis nigris in ♂ praeditum. Femora postica intus extusque fascia arcuata nigra geniculari. Abdomen in longitudinem costulatum, punctis stigmaticis nigris. ♂ ♀.

Long. corp. ♂ 21 ; pron. 2.8 ; fem. post. 8.5 mill.

" ♀ 50 ; " 5 ; " " 13 mill."

PSEUDOGELOIUS gen. n.

Body large, elongated, cylindrical. Integument rugose. Antenna shorter than head and pronotum together, in basal part triangular in cross section, widened, segments bead-like, separated, apical segment at apex slightly bilobate. Fastigium of vertex elongated, angular, forming large process with upper, frontal part of head ; fastigial areolae poorly developed, frontal ridge in upper part lamelliformly compressed and projecting, in lower part low, sulcate on whole length, lateral carinulae low, obtuse ; frons in profile strongly incurved ; compound eyes small, strongly convex, slightly oval ; ocelli vestigial ; head above with linear median carinula. Pronotum cylindrical ; median carina weak, linear ; lateral carinae hardly traceable as irregular wrinkles ; two sulci crossing dorsum ; metazona much shorter than prozona, with straight posterior margin, not covering mesonotum. Prosternal process short, almost square, with rounded apex and slightly raised anterior margin. Metasternal interspace distant from mesosternal one. Elytra, wings and tympanal organ absent. Anterior and middle legs short. Hind femur moderately narrow, compressed. External apical spine of hind tibia present. Arolium large. End of male abdomen inflated ; last abdominal tergite very large, inflated, its posterior margin incised and bilobate in middle ; supra-anal plate small, narrow angular, shorter than cerci ; cercus very large, incurved, basal part wide, apical part compressed and strongly widened, forming at lower apical part an attenuate angular projection and in upper part a very large, inverse axe-shaped projection ; subgenital plate short, subconical with obtuse apex. Female supra-anal plate angular, with obtuse apex ; cercus simple, short, compressed, angular ; subgenital plate trilobate, with angular lobes ; ovipositor moderately slender, with valves curved at apices.

Phallic complex : large, with dorsal part of ectophallic membrane and additional lateral lobes projecting upwards ; valves of cingulum large, complicatedly shaped, forming three lobes ; valves of penis curved ; basal valve strongly widened, forming large lateral projection ; apical

valve slender, with acute apex. Epiphallus : bridge very large, almost square, poorly sclerotized disc merging with bridge ; lophi fused with the disc, with strong apical hooks ; dorso-lateral appendices slender, shorter than the disc, with curved, acute apices. Spermatheca with single, sac-like, but rather slender diverticulum.

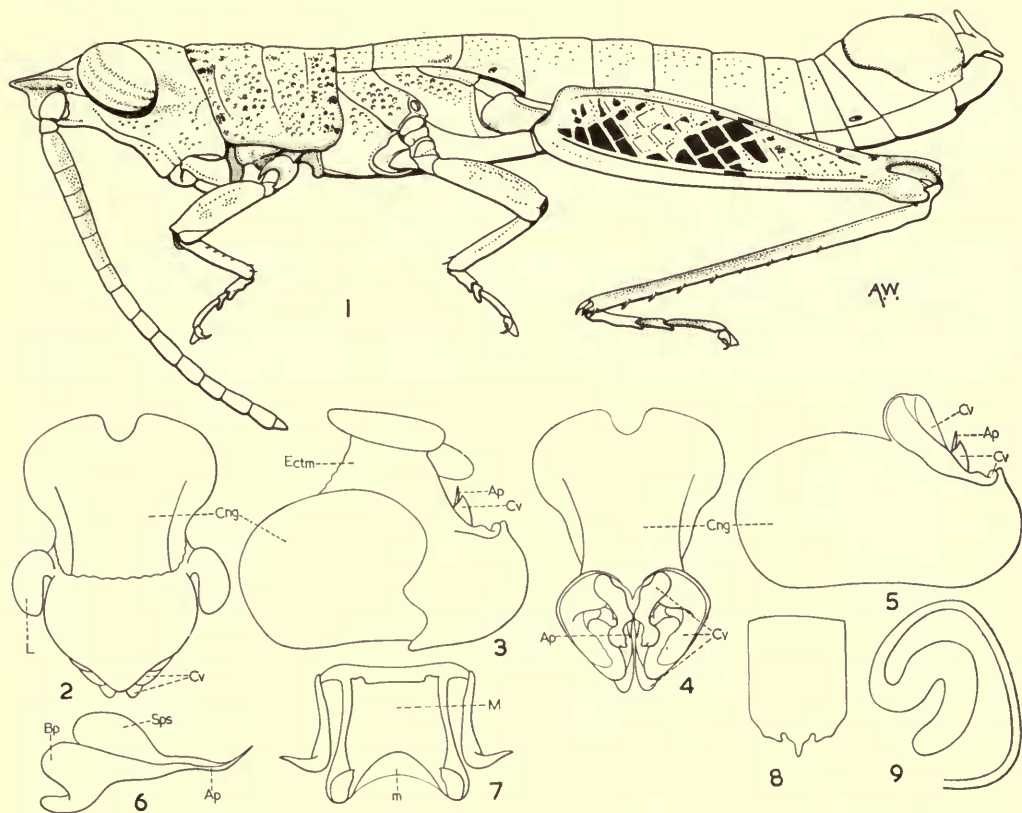


FIG. 25. *Pseudogeloius relictus* sp. n. ♂ type. 1, male. 2, phallic complex from above, epiphallus and part of ectophallic membrane removed ; L, lateral lobes of ectophallic membranes. 3, the same, lateral view. 4, phallic complex from above, with whole ectophallic membrane removed. 5, the same, lateral view. 6, penis and spermatophore sac. 7, epiphallus ; M, thicker membranous part ; m, thinner membranous part. 8, female subgenital plate. 9, spermatheca.

Type species : *Pseudogeloius relictus* sp. n.

Pseudogeloius is superficially very similar to the genus *Geloius*. It differs, however, very much by the structure of the last abdominal tergite in the male, by the peculiar structure of the male cercus, by the structure of the phallic complex and by the absence of teeth on the male anterior femora.

According to its general appearance it seems that the new genus ought to be referred to the *Geloius* Group in which it is placed tentatively. Other characters mentioned above, however, are so strikingly different that it is possible that they

are not related at all. There is a possibility that similarities in general appearance of the two genera are due to convergence.

***Pseudogeloius relictus* sp. n.**

(Text-figs. 25, 26)

♂ Type. Antenna 16-segmented. Fastigium of vertex angular, in profile angularly protruding, its sides in basal part excurved, fastigial suture long; frontal ridge roundly protruding between antennae. Lateral lobes of pronotum longer than its height, with rounded angles. Mesosternal interspace longer than its width, its sides strongly incurved, lateral foveolae long and deep. Metasternal interspace forming X-shaped pattern. Abdomen rugose. Medial area of external side of hind femur forming rhomboidal pattern. Lower lobes of hind knee narrowed towards rounded apex.

General coloration brownish, with scattered small, brown spots; external side of hind femur with irregular black pattern; hind tibia brownish. Spiracles each surrounded by a black spot.

♀. Paratype. Much larger than the male. Antenna 15-segmented and more widened. Valves of ovipositor with acute curved apices; external upper margin of upper valve serrated.

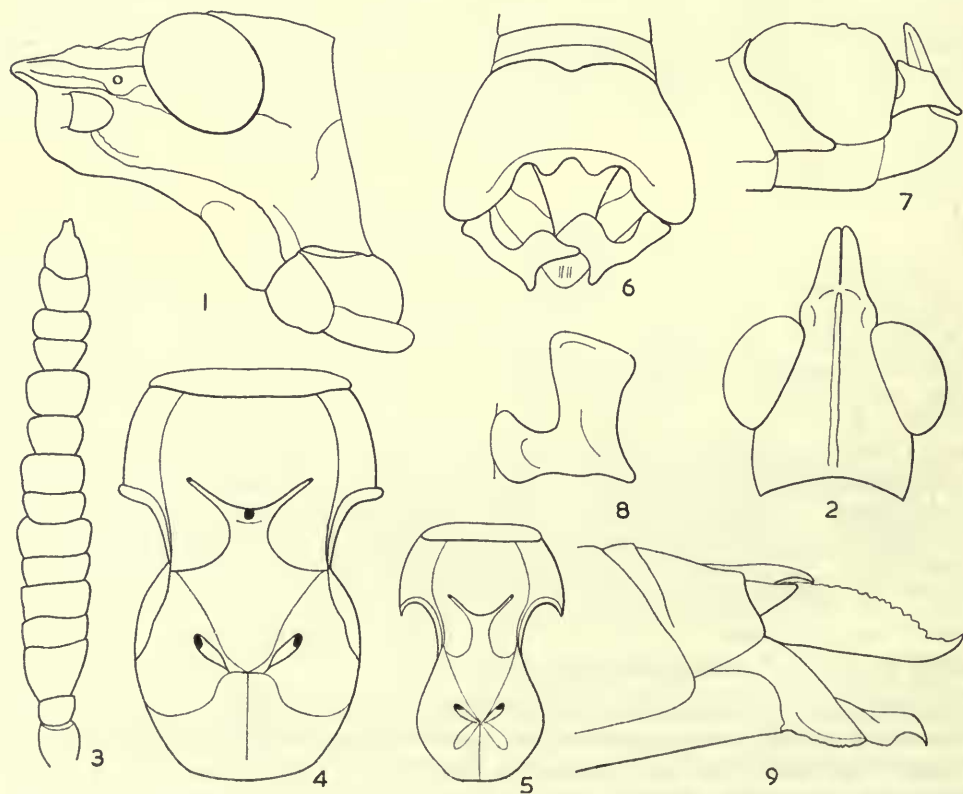


FIG. 26. *Pseudogeloius relictus* sp. n. 1, female head, lateral view. 2, male head from above. 3, female antenna. 4, meso- and metasternum, female. 5, the same, male. 6, end of abdomen, from above. 7, the same, lateral view. 8, male cercus, lateral and slightly posterior view. 9, female end of abdomen.

Coloration uniform brown ; internal side of hind femur ochraceous ; external side as whole body ; hind knee brown ; upper side of hind tibia ochraceous, lower side blackish. In other respects as the male.

Length of body ♂ 25.0-26.5, ♀ 39.0-46.5 ; pronotum ♂ 3.6-3.9, ♀ 5.6-5.8 ; hind femur ♂ 10.4-10.5, ♀ 14.5-15.0 mm.

Madagascar Est : Perinet, ii.1938, 2 ♂ (including type), 2 ♀ (Paratypes) (*A. Seyrig*). La Dakoa, 1 ♀ (Paratype) (*R. P. Cattala*).

Type and two female paratypes are in the Paris Museum. One male and one female paratypes are in the British Museum (Natural History).

SCHULTHESSIA I. Bolivar, 1905

From small to medium size. Body moderately ensiform. Integument rugose. Antenna thick, filiform, slightly compressed in basal part, shorter than head and pronotum together, their bases located in front of lateral ocelli. Head acutely conical, with a row of large, postocular tubercles ; fastigium of vertex elongated, angular ; apical fastigial areolae poorly developed ; frons strongly oblique, incurved ; frontal ridge low, narrow, shallowly sulcate. Oculus twice longer than its width ; ocelli of medium size. Pronotum elongate, widening backwards, dorsum narrow, flattened, crossed by two sulci ; median carina linear ; lateral carinae weak, present in prozona only ; metazona shorter than prozona, its posterior margin obtusangular ; lateral lobes of pronotum diverging from dorsum, lower margin straight, oblique, with a row of tubercles, posterior angles acute. Prosternal process cuneiform, its anterior surface concave. Mesosternal interspace wider than its length ; metasternal interspace transverse, distant from mesosternal. Elytra and wings fully developed, exceeding end of abdomen ; elytron narrow, tapering towards acute apex ; venation and reticulation dense. Tympanal organ fully developed. Coxa of middle leg on external side with two tubercles ; coxa of hind leg with one tubercle ; external, lower marginal area of hind femur widened and strongly displaced ventrally to medial area ; lower lobes of hind knee much shorter than upper ones ; hind tibia of normal shape ; external apical spine present ; hind tarsus slender, elongated. Arolium large. Male supra-anal plate elongate, angular ; cercus short, conical ; slightly upcurved subgenital plate conical, with obtuse apex. Ovipositor moderately slender, with curved valves ; subgenital plate trilobate.

Phallic complex : Cingulum elongate ; valve of cingulum short ; basal valve of penis strongly widened and downcurved ; apical valve wide with large dorsal appendix ; spermatophore sac large. Epiphallus with moderately long bridge ; lophi short, wide, with large hooks ; dorso-lateral appendices large, club-like, widened at apex.

Spermatheca with long, strongly twisted diverticulum, with numerous pockets.

Type species : *Schulthessia biplagiata* I. Bolivar, 1905.

This genus, according to the position of the antennae and the shape of the lower external area of hind femur, belongs to the same group as *Atractomorpha*. However, the phallic complex has a very different structure (Text-figs. 27, 28) which makes their close relationship rather unlikely. Possibly their external characters are convergent.

Schulthessia biplagiata I. Bolivar, 1905 (Text-fig. 27)

♂. Small. Antenna 15-segmented. Fastigium of vertex narrow angular, with parabolic apex ; fastigial furrow short ; carinulae of frontal ridge low, obtuse ; head above with longitudinal wrinkles. Dorsum of pronotum with longitudinal wrinkles and a few small tubercles, a

pair of them in front of the first sulcus ; posterior margin of lateral lobe shallowly excised, posterior angle subacute ; episternum with angular apex and serrated anterior margin, lower lobes of hind knee angular. Last abdominal tergite with rounded excision. Supra-anal plate longer than cerci.

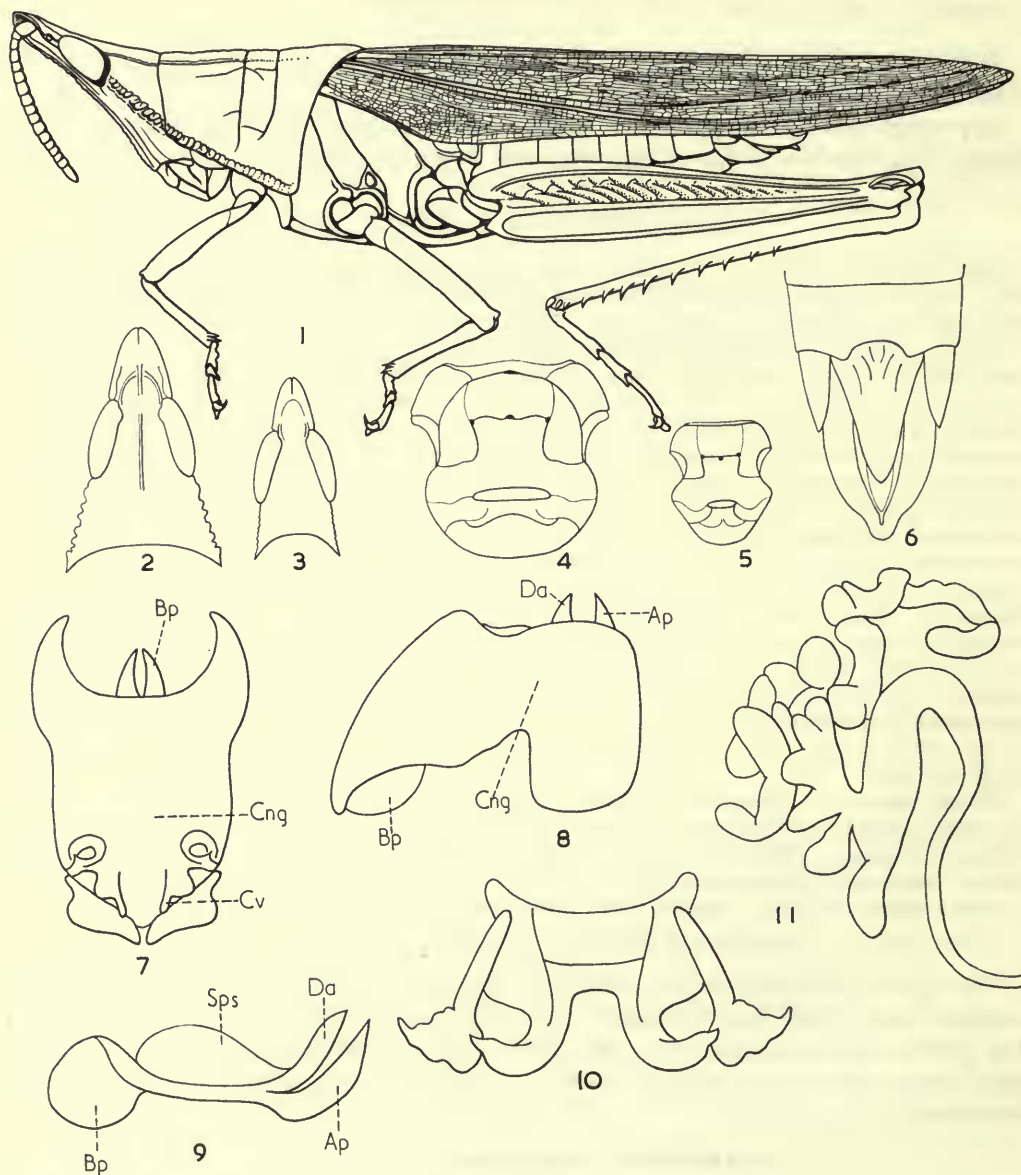


FIG. 27. *Schulthessia biplagiata* I. Bolivar, 1905. 1, female. 2, head from above, female 3, the same, male. 4, meso- and metasternum, female. 5, the same, male. 6, end of abdomen from above, male. 7, phallic complex from above, epiphallus and ectophallic membrane removed. 9, penis and spermatophore sac. 10, epiphallus. 11, spermatheca.

General coloration green or brownish ; internal side of third basal antennal segment with blackish or brown spot ; postocular and marginal rows of tubercles of lateral lobe of pronotum ochraceous ; lower edge of lateral lobe of pronotum red ; elytra and external side of hind femur with a few small, scattered reddish or brown spots ; hind wing raspberry-red ; hind tibia green.

♀. As the male, but larger, with body more fusiform. Antenna 16-segmented.

Length of body ♂ 20.0-22.2, ♀ 30.3-37.4 ; pronotum ♂ 4.0-4.3, ♀ 7.2-8.5 ; elytron ♂ 15.2-17.3, ♀ 23.7-28.0 ; hind femur ♂ 10.0-11.0, ♀ 15.5-17.0 mm.

This species is variable in body size and general coloration

Madagascar Nord : Nosy Komba, xi.1956, 1 ♀ (*G.R.*) ; Montagne d'Ambre, Les Roussettes 1,100 m. xi-xii.1958, 1 ♂ (*A. Robinson*).

Madagascar Nord-Ouest : Ampijoroa, Tsaramandroso, 2 ♀.

Madagascar Nord-Est : Ile Sainte-Marie, Ile aux Nattes, iii.1960, 1 ♂ (*A. Robinson*). Ile Sainte-Marie, Antanandava, iii.1960, 3 ♂, 2 ♀ (*A. Robinson*).

Madagascar Est : Ambila Lemaitso, iii.1951, 1 ♂, a ♀ (*A. Robinson*).

ATRACTOMORPHA Saussure, 1861

Perena Walker, 1870 : 506 ; I. Bolivar, 1905 : 196.

Small or medium size. Integument finely rugose. Antennae slightly compressed, shorter than head and pronotum together, their bases located in front of lateral ocelli. Head narrow, acutely conical, with a row of postocular tubercles ; fastigium of vertex elongated, flat, horizontal or slightly upcurved, with parabolic or angular apex ; fastigial areolae poorly developed ; frons strongly oblique, incurved ; frontal ridge narrow and low, shallowly sulcate, with obtuse lateral carinulae. Pronotum elongated, subcylindrical, slightly widening backwards ; dorsum slightly flattened, crossed by three fine sulci ; median and lateral carinae weak ; metazona much shorter than prozona, its posterior margin widely obtusangular, almost rounded ; lateral lobe with a row of lower marginal tubercles. Prosternal process cuneiform. Mesosternal interspace wider than its length, distant from metasternal interspace, which is transverse. Elytra and wings fully developed ; apex of elytron acutely attenuate. Tympanal organ well developed. Hind femur narrow, with external lower marginal area narrow, displaced ventrally to external medial area ; lower lobes of hind knee much shorter than upper ones. Male subgenital plate short, with rounded apex. Ovipositor moderately long and moderately robust, with valves curved at apices ; upper external margin of upper valve roughly serrated ; lower valve with external, lateral projection. Epiphallus with very long bridge widening in posterior part ; lophi represent widened part of bridge and are completely fused with it.

Type species : *Truxalis crenulatus* Fabricius, 1793.

Atractomorpha acutipennis (Guérin-Méneville, 1844) (Text-fig. 28)

Truxalis (Pyrgomorpha) acutipennis Guérin-Méneville, 1844 : 340.

Atractomorpha gerstaeckeri I. Bolivar, 1844 : 66 ; Banerjee & Kevan, 1960 : 183.

Atractomorpha aurivillii I. Bolivar, 1844 : 67 ; Banerjee & Kevan, 1960 : 183.

Atractomorpha congensis Saussure, 1893 : 581 (nom. nud.) ; Kevan, 1960 : 40.

Atractomorpha hova Saussure, 1899 : 640 ; Banerjee & Kevan, 1960 : 182.

P[yr]gomorpha madagascariensis Blanchard ; I. Bolivar, 1905 : 209 (nom. nud.) Banerjee & Kevan, 1960 : 183.

Atractomorpha madacassis Bruner, 1910 : 628 ; Banerjee & Kevan, 1960 : 183.

Atractomorpha acutipennis (Guérin-Méneville, 1844) ; Kirby, 1910 : 332.

Atractomorpha brevis Uvarov, 1938 : 274, 280 ; Banerjee & Kevan, 1960 : 184.

Atractomorpha externa Bey-Bienko, 1949 ; Banerjee & Kevan, 1960 : 184.

Atractomorpha acutipennis gerstaeckeri I. Bolivar, 1884 ; Banerjee & Kevan, 1960 : 183, **syn. n.**

Atractomorpha acutipennis brevis Uvarov, 1938 ; Banerjee & Kevan, 1960 : 184, **syn. n.**

♂. Antenna 16 or 17-segmented. Eyes elongated oval ; ocelli large. Pronotum tuberculate, particularly along weak lateral carinae ; posterior margin of lateral lobe deeply and widely excised ; posterior angle acute ; episternum with angular apex and serrated anterior margin.

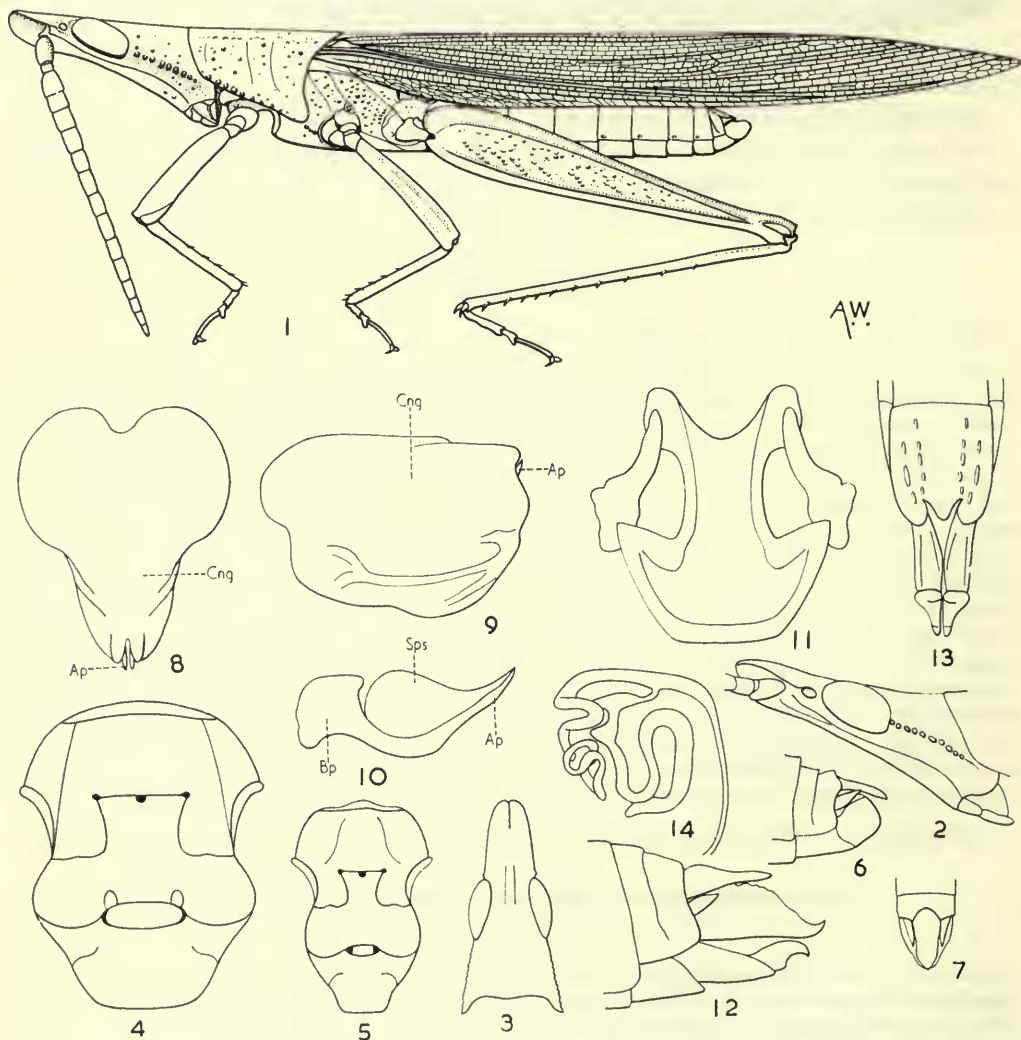


FIG. 28. *Atractomorpha acutipennis* (Guérin-Ménéville, 1844). 1, male. 2, head of female, lateral view. 3, head of male from above. 4, meso- and metasternum, female. 5, the same, male. 6, end of male abdomen, lateral view. 7, the same, from above. 8, phallic complex from above, epiphallus and ectophallic membrane removed. 9, the same, lateral view. 10, penis and spermatophore sac. 11, epiphallus. 12, end of female abdomen, lateral view. 13, the same, from below. 14, spermatheca.

Lower lobes of hind knee angular. Last abdominal tergite in middle with rounded excision. Supra-anal plate longer than cerci.

Phallic complex : cingulum pear-shaped, with considerably widened basal part ; valve of cingulum short ; valves of penis curved ; basal valve strongly widened ; apical valve slender, upcurved. Spermatophore sac very large. Epiphallus with bridge slender in anterior and strongly widened in posterior part.

General coloration uniformly green or brownish ; hind wing in basal part pink.

♀. Larger than the male ; body less slender. Antenna 16-segmented. Subgenital plate with trilobate apex and two pairs of rows of small, lateral tubercles.

Spermatheca with two long vermicular diverticula. In other respects as the male.

Length of body ♂ 19.0-25.0, ♀ 28.0-39.8 ; pronotum ♂ 4.0-5.1, ♀ 6.2-9.0 ; elytron ♂ 18.6-24.0, ♀ 24.0-35.2 ; hind femur ♂ 8.7-10.9, ♀ 13.3-17.0 mm. (The measurements are based on Madagascar material only.)

Banerjee and Kevan (1960) made a preliminary revision of the genus *Atractomorpha* and established the synonymy of its species. They recognized three subspecies of *Atractomorpha acutipennis* (Guérin), namely *A. acutipennis acutipennis* (Guérin) confined to Madagascar only, *A. acutipennis gerstaeckeri* I. Bolivar distributed in Central Africa and Comoro Is., and *A. acutipennis brevis* Uvarov distributed in Sudan, Ethiopia, S.W. Arabia, Persia and Afghanistan. However, when a large amount of material of all three subspecies was studied, it was found that the series of specimens of every subspecies fits very well into the series of any other subspecies, and if the locality labels were ignored, it would not be possible to divide them into subspecies. The only solution at this stage of our knowledge of the genus *Atractomorpha* is to disregard these subspecies.

It is well known, and has been repeated in the literature, that a greater range of variability of the species of *Atractomorpha* exists. In the case of *A. acutipennis* the variability manifests itself in size and slenderness of body, length and degree of acuteness of elytra, and in length and partly in shape of the fastigium of the vertex. The membranous area near the posterior margin of the lateral lobe of the pronotum, mentioned by Banerjee and Kevan (1960) as a specific character, is also variable and in many specimens is not detectable.

Madagascar Nord-Ouest : Sitampiky, vii.1947, 1 ♂ (J.D.) ; Ampijoroa, Tsaramandropo, 2 ♀.

Madagascar Ouest : Ankavandra, vii.1949, 1 ♂ (*R. Paulian*).

Madagascar Nord-Est : Ile Sainte-Marie, Ambatoroa, v.1959, 1 ♀ (*Razafimandimby*).

Madagascar Centre : dct. de Miarinarive, Fidasiana, viii.1958, 1 ♀, (*A. Robinson*) ; Tananarive, Tsimbazaza, 1 ♂, 2 ♀.

Madagascar Sud-Ouest : Lambomakandro, 500 m., Tuléar, vii.1957, 1 ♂ (*A. Robinson*) ; Tongobory, Sept-Lacs, 1 ♂ (*A. Robinson*).

Madagascar Est : Périnet (Sahamaloto) 13-17.i.1949, 1 ♀ ; Station Agricole, Brickaville, 1 ♂, 2 ♀ ; Fampanambo, 25 m., dct. Maroantsetra, iii.1958, 1 ♂, 2 ♀ (*Soga, Raharisonima*).

UHAGONIA I. Bolivar, 1905

Of medium size. Body strongly fusiform. Integument finely granulose. Antenna filiform, much shorter than head and pronotum together, located in front of lateral ocelli. Head acutely conical; fastigium of vertex angular; frons oblique, straight; frontal ridge below antennae almost obliterated; between and in front of antennae projecting forwards, with tuberculate lateral carinulae and protruding apex ending with tubercle; in front, before merging with fastigium of vertex, it forms deep excision; compound eyes small; ocelli hardly detectable. Pronotum subcylindrical, widening backwards, median carina weak; dorsum crossed by three sulci; metazona about one third of length of prozona, its posterior margin straight or slightly incurved. Prosternal process collar-like, or tongue-like, projecting in middle. Mesosternal interspace short and wide; metasternal interspace very wide, slit-like, distant from mesosternal one. Elytra strongly reduced or absent; tympanal organ absent. Anterior and middle femora on external side slightly tuberculate; hind femur with very narrow upper external area; lower external area widened and displaced ventrally to medial area. External apical spine of hind tibia present; hind tarsus elongated, slender. Arolium large. Supra-anal plate elongate angular, with transverse median sulcus; cercus compressed, short, angular; ovipositor elongated, slender; valves straight, slightly curved at apices; subgenital plate in middle with narrow angular projection.

Type species : *Uhagonia sphenarioides* I. Bolivar, 1905.

KEY TO SPECIES

- 1 (2) Strongly reduced elytra present, wings absent. Fastigium of vertex about twice as long as longest diameter of eye *sphenarioides* I. Bolivar
 2 (1) Elytra and wings absent. Fastigium of vertex as long as longest diameter of eye *depressa* sp. n.

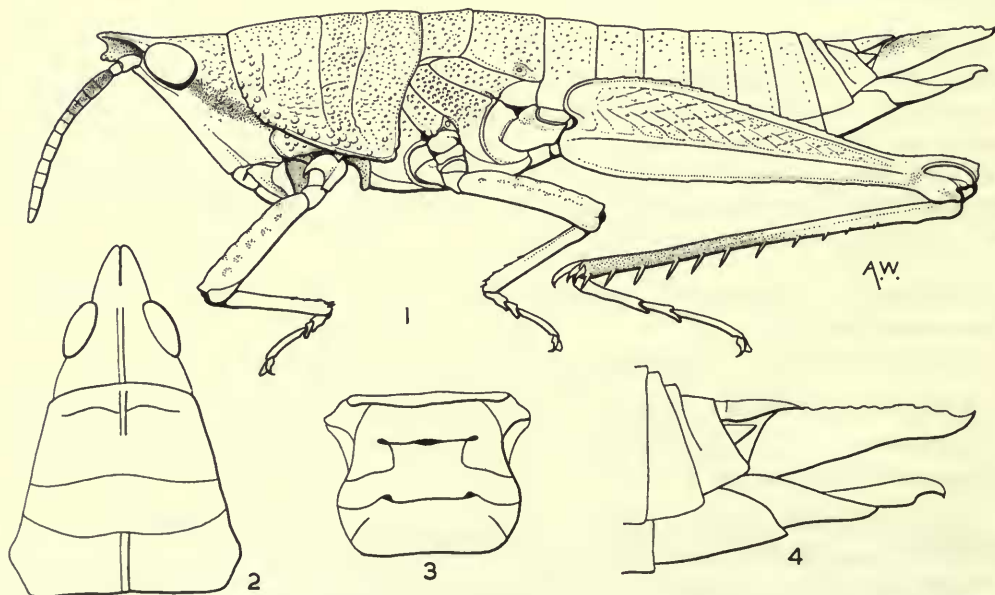


FIG. 29. *Uhagonia depressa* sp. n. ♀ type. 1, female. 2, head and pronotum from above 3, meso- and metasternum. 4, end of abdomen.

Uhagonia sphenarioides I. Bolivar, 1905

♀. Type. (Redescription.) Body fusiform. Antenna 13-segmented. Fastigium of vertex acutely angular, about twice as long as longest diameter of eye ; fastigial furrow long ; carinula of vertex hardly detectable. Posterior margin of metazona of pronotum almost straight, with small incision in middle ; lateral lobe of pronotum longer than its height, lower margin straight, oblique. Elytra strongly reduced, reaching middle of metanotum, of oval form, with lateral margins inflated and with oval, bladder-like inflation in middle ; venation obliterated ; wings absent. Upper carina of hind femur roughly serrated. Ovipositor long and slender ; external margin of upper valve irregularly serrated.

General coloration probably greenish (the specimen is discoloured by previous preservation in liquid) ; margins of elytron blackish, middle inflation brown.

Length of body 42.0 ; pronotum 7.8 ; elytron 1.8 ; hind femur 18.0.

Type locality : Madagascar. Type in the Vienna Museum.

Uhagonia depressa sp. n.

(Text-fig. 29)

♀ Type. Antenna 13-segmented. Fastigium of vertex strongly granulose, as long as longest diameter of eye ; carinula of vertex present. Lateral lobe of pronotum longer than its height, lower margin oblique. Mesosternal interspace about three times as wide as its length. Elytra and wings absent. Upper carina of hind femur serrated. Upper external margin of upper valve of ovipositor roughly serrated.

General coloration uniformly light olive-green ; apical two thirds of hind tibia and tarsus bright red. Male unknown.

Length of body, 30.5 ; pronotum 6.7 ; hind femur 15.2 mm.

Madagascar Est : Dct. Sambava, R.N. xii, Marojejy, Ambatosoratra 1,700 m., xi.1960, 1 ♀, type (*P. Soga*).

Type in Paris Museum.

LIST OF SPECIES RECORDED FROM MADAGASCAR
BUT NOT FOUND IN THE MATERIAL STUDIED

Phymateus morbillosus (Linnaeus, 1758)

There is only one record for this African species from Madagascar by Walker, 1870. Probably it is the result of a misidentification, as *Ph. morbillosus* has never since been recorded from Madagascar. The record should probably be referred to *Phymateus saxosus* Coq.

Rutidoderes squarrosus (Linnaeus, 1771)

Walker's (1870) record for this species from Madagascar is also likely to be a result of misidentification. The species has never been recorded since. The record probably ought to be referred to *Phymateus madegassus* Karsch.

Zonocerus hova Saussure, 1899

This species is a synonym of *Zonocerus elegans* (Thunberg, 1815), and was erroneously recorded from Madagascar (see Dirsh, 1961).

Buyssoniella madecassa I. Bolivar, 1905

This genus and species was described from Madagascar and placed by I. Bolivar in the subfamily *Atractomorphae*.

Since his description it has never been recorded again and the type is lost. The description is so inadequate that it is not possible to decide the real identity of the genus and species or its interrelation with other genera and species, except that it belongs to the "group *Atractomorphae*".

ADDENDUM

Ixalidium haematoscelis Gerstaecker, 1869

This species of the subfamily *Catantopinae*, described and many times recorded from East Africa, was recorded from Madagascar by Bruner, 1910. Most probably the record is erroneous and ought to be referred to one of the genera and species near the genus *Serpusilla*.

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